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Original Articles.

THE APPARENT IMMUNIZING VALUE OF ATTENUATED TUBERCLE BACILLI.*

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The recent attention which has been drawn to the difference in virulence of tubercle bacilli from various animals, and the publication by Behring of the production of immunity to tuberculosis in cattle by the use of tubercle bacilli of low virulence, have suggested that if perhaps a little more attention had been given to some work published in December, 1894, there would have been less tendency in some quarters, at any rate, to assume an absolute difference between tubercle bacilli obtained from men and those obtained from cattle. The published works of the writer and Dorset and Schroeder, Ravenel, Nocard and that of others, have shown so conclusively that it is possible to obtain tubercle bacilli, sometimes from the sputum of adults and frequently from intestinal lesions in children, which will produce tuberculosis in cattle when the latter are inoculated subcutaneously, that it seems now almost a waste of time to discuss a question which has been so positively proved. Considering further the numerous cases of accidental infection with bovine tuberculous material, and also that monkeys are more readily infected with bovine tuberculosis than with human tuberculosis, and it is well known that monkeys are more closely allied to man than any other animal, the possibility of the intercommunicability of bovine and human tuberculosis has been well established. The fact, further, that tubercle bacilli as well as other bacilli become more or less attenuated, depending on their growth on artificial media outside of the animal body or on their cultivation within the animal body, or in other words, the fact that they are easily influenced like other plants, by changes in soil and climate, has also been well proven by ourselves and others.

Our work, published in 1894,[1] was the first to show that guinea-pigs that had received large doses of attenuated human tubercle bacilli, those bacilli that had largely lost their virulence or power of producing disease, were rendered resistant and immune to subsequent inoculation with tuberculous material of bovine origin. Futher, in 1894-5-6-7-8, cattle and various other large and small animals were injected with frequent doses of attenuated tubercle bacilli and in some cases subsequently tested by inoculation with bovine tuberculous material. While the earlier works on the effect of large doses and the apparent immunizing value of attenuated human cultures on cattle were reported in 1896, Bulletin No. 13, Bureau of Animal Industry, and in the Proceedings of the Association of American Physicians, 1897, the results of the practical tests on some of these animals with tuberculous material have never been recorded, but may be of interest now. The practical treatment of these animals was made for me at the Experiment Station of the Bureau of Animal Industry by Dr. E. C. Schroeder.

In one of our earlier experiments begun in 1894, an old cow, 285, from a tuberculous herd, which on physical examination appeared to be clearly tuberculous, was given large injections of tuberculin, subcutaneously. The first dose used was 25 c.c. and the amounts were gradually increased so that between August, 1895, and October, 1897, when the animal was killed, it had received altogether 19,500 c.c. of tuberculin, as much as 1,500 c.c. being given at one dose. After four months' treatment with tuberculin the cow seemed to improve considerably. This apparent improvement, however, did not persist and the autopsy, when made in 1897, showed a most generalized tuberculosis, all stages of the disease being apparent. If the treatment with tuberculin had any beneficial effects the disease was so far advanced when the treatment was begun that no practical benefit could be secured.

IMMUNITY TESTS ON CATTLE.

On July 26, 1894, cow 217 received an injection in the jugular vein of 16 c.c. of a suspension of an attenuated human tubercle culture then in the 17th generation. This injection produced a large swelling at the seat of inoculation, but no other evidence of tuberculosis was noted.

On Nov. 28, 1894, this same animal received an abdominal injection of 6 c.c. of the 23d generation of attenuated culture. On Jan. 25, 1895, it received an intrathoracic injection of 6 c.c. of unfiltered culture of the 26th generation. On March 5, 1895, it received an injection into the right side of the chest of 16 c.c. of the 33d generation of a tubercle culture. Between April, 1895, and July, 1897, the animal received subcutaneous injections of attenuated tubercle culture, as much as 2,000 c.c. being given at a single injection. Altogether, therefore, it had received one intravenous, two intrathoracic, two abdominal and thirty-nine subcutaneous injections of attenuated tubercle culture. As the animal appeared to be in good health and well on Feb. 22,

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1 Medical News.

1898, it received an injection into the thoracic cavity of 10 c.c. of a turbid triturate of a tuberculous gland obtained from a cow. This gland contained many virulent bacilli, as proved by inoculation tests. On Sept. 20, 1898, this cow was killed, and postmortem examination showed it to be free from disease, indicating, therefore, that neither the attenuated human culture nor the bovine material had produced tuberculosis.

Another cow, 297, the offspring of the tuberculin cow just referred to, 285, was tested with tuberculin on Nov. 19 and 20, 1894, and found free from disease. On Nov. 24, 1894, it received an injection in the abdominal cavity of 6 c.c. of the 23d generation of a tubercle culture. The temperature as taken for ten days following the injection seemed to indicate no disease. Between Jan. 25, 1895, and July 25, 1895, it received five subcutaneous injections of attenuated tubercle culture, about 250 c.c. being given altogether. In August, 1895, it received an injection of a bovine culture. Beginning again Dec. 2, 1895, it received large subcutaneous injections of attenuated tubercle culture, about 13,500 c.c. of the material being given altogether. On Feb. 22, 1898, at the same time that 217 was inoculated, it received an intrathoracic injection of some of the same tuberculous material as that given to 217. Killed on Sept. 20, 1898, when apparently in good condition, the autopsy showed a few tubercular nodules in the udder, while the superficial lymph glands, liver, kidneys and spleen were normal. There were, however, some large tubercular masses on the pleura. The tubercular lesions appeared to have come from the first inoculation with bovine material.

In April, 1896, two calves were inoculated with smaller doses of attenuated tubercle culture, subcutaneously, two animals with serum from cow 285, which in its turn, as reported, had received large doses of tuberculin, and two animals were reserved as checks. These calves subsequently tested with bovine tuberculous material did not show the same amount of resistance as did those first inoculated. One of the calves which had received preventive inoculations of the serum from cow 285 seemed to possess immunity. So far as the records of the check inoculated with bovine material show (these latter records are unfortunately incomplete) the check contracted tuberculosis from which it died in September, 1896, while the preventively inoculated animals had shown considerable resistance. The established immunity was not as good as that obtained in the first experiments. In the first tests several intravenous inoculations, as well as subcutaneous, were made. In the second set only a small number of subcutaneous inoculations were made.

These experiments on cattle considered in connection with those on guinea-pigs showed that as it was possible to vaccinate against bovine tuberculosis by means of tubercle bacilli of human origin, then we are simply dealing with tubercle bacilli of varying degrees of virulence, and not tubercle bacilli that are really different from each other. The readiness, as we have shown, with which not only human but, as may be seen from the records attached, also bovine tubercle bacilli may be attenuated, and the ease with which, according to Nocard, avian tubercle bacilli may be converted into those of a mammalian character, all go to prove the intimate relationship of bacilli obtained from various sources.

Steer 242 was drenched with bovine tuberculous material on Jan. 10, 11, 13 and 21, 1902. On February 17, 18 and 26 of the same year, tested with tuberculin, a positive reaction was given. On October 6, about nine months after the first drenching, this animal was killed. A few small foci of a tuberculous character were found in the mediastinal and in the lymph glands at the entrance of the thorax; otherwise no evidence of tuberculosis.

On Nov. 2, 1901, bull 223 was inoculated subcutaneously with 10 c.c. of bovine culture No. 3 (Smith). On Jan. 21, 1902, and April 18, 1902, reactions after tuberculin injections were noted. On Oct. 2, 1902, when the animal was killed, its general condition was excellent. At the seat of inoculation there was a patch of induration about six inches in diameter in which were imbedded small abscesses containing a soft, cheesy material. The shoulder glands on the side of infection, both deep and superficial, were enlarged and sprinkled with necrotic foci. The mediastinal glands contained numerous necrotic foci. No other lesions of any kind were present.

This animal showed very much less tuberculosis than that found after six weeks in a calf which received, subcutaneously, injections of material from tuberculous cultures isolated from children. Compared with the record of another heifer, 284, which had been inoculated with a different virulent bovine culture (a culture that had been isolated from a spontaneous case of disease occurring at the Experiment Station), and which showed after eight weeks very generalized tuberculosis, it is very evident that the bovine germ by cultivation loses in violence and in ability to produce disease just as well as the human bacillus. It becomes attenuated. This is another strong point and emphasizes the influences of environment on the virulence of bovine as well as human bacilli.

Our earlier work and results in this connection have therefore simply been confirmed by the recent experiments of MacFadyean, Behring, Pearson and Gilliland and others.

DISCUSSION.

DR. L. HEKTOEN, Chicago—Did I understand the author to mean by attenuated bacilli those that have been cultivated artificially for some considerable time?

DR. M. DORSET, Washington, D. C.—This culture referred to is one which lost its virulence after having been cultivated for several years and one which will not kill guinea-pigs even in large doses.

DR. JOSEPH MCFARLAND, Philadelphia—Is that a peculiarity of this bacillus or is the same true of all bacilli? Do they all become attenuated?

DR. M. DORSET, Washington, D. C.—This particular human culture is the most attenuated form we have. We have some human tubercle bacilli that have been growing for ten years without passage through an animal, and they are still quite virulent for guinea-pigs. This particular culture does seem to be an exception.

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.—I would like to ask the gentlemen present if it has been their experience that tubercle bacilli become attenuated after having been grown for many generations?

DR. JOSEPH MCFARLAND, Philadelphia—I brought back with me from Berlin in 1895 a tubercle bacillus that had been isolated by Koch many years ago, and I kept it growing for more than five years. At the end of that time it seemed to have retained its virulence. I never went through any quantitative method of determining this, but relatively its virulence did not seem to be diminished. Unfortunately I lost the germ and could not continue the experiment.

DR. VICTOR C. VAUGHAN, Ann Arbor, Mich.—In 1888, when I was a student in Koch's laboratory, Professor Fraenkel gave me a culture of the tubercle bacillus which he said was the

112th generation of one of the first cultures made by Professor Koch in 1882. I used that germ and its descendants in experiments on guinea-pigs and rabbits and it retained its virulence until about 1896. During the interval between 1888 and 1896 no year passed in which I did not inoculate animals with this germ, and in every case it was found to be virulent. In 1896 it began to lose its virulency for guinea-pigs, and soon ceased to have any effect even in large doses. Two years ago I sent to Dr. Lartigau a culture of this germ and a few weeks ago I had a letter from Dr. Baldwin of Saranac, saying that he had obtained the culture from Dr. Prudden and had experimented with it and that his experiments had confirmed my statements. The germ has completely lost its virulence so far as guinea-pigs were concerned.

NEW PHYSIOLOGIC APPARATUS.

THE FROG-BOARD MYOGRAPH AND THE MANOMETER TAMBOUR.*

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CHICAGO.

THE FROG-BOARD MYOGRAPH.

The term myograph was originally applied to the whole apparatus used in recording the contraction of a muscle. The pendulum myograph of Helmholtz included the muscle-clamp, the muscle-lever and the moving surface (pendulum) on which the myogram or muscle-tracing was recorded. After the rotating cylinder came into use as a recording surface under the name of the kymograph, the term myograph has been applied to that portion of the apparatus which represented the muscle-clamp and the lever with the load and the tracing point. Such an apparatus traces on the kymograph the muscle-curve or myogram.

The myograph has taken several forms: In the simple myograph of Helmholtz, in the muscle-signal of Du Bois Reymond, and in several other forms the muscle is exposed to the atmosphere. The changes wrought by the atmosphere soon put the muscle-nerve preparation into an abnormal condition and the responses to stimuli are not typical. In fact, the evaporation of moisture soon condenses the tissue-plasma sufficient to induce a typical "salt-tetanus." The application of normal saline solution can temporarily, but only temporarily, avert such a result.

To reduce to a minimum the effect of atmospheric changes the so-called "moist-chamber" was devised. This consists of a glass chamber which enclosed the muscle and nerve and the electrodes with the muscle clamp. A wire or thread passes through the bottom of the chamber to the tracing lever. The air in the chamber is kept saturated with moisture by a wet paper or sponge within. This device overcomes to a large extent the difficulties with which one must contend in attempting to work with the exposed muscle. There is one serious difficulty, however, which has not been mentioned and which is not corrected by the moist-chamber myograph, namely, the cutting off of the muscle from the blood and lymph circulation. In the classic method of making a muscle-nerve preparation from the gastrocnemius muscle and sciatic nerve of the frog, the muscle and nerve, with a portion of the femur, are completely removed from the frog's body, thus not only exposing them to atmospheric changes, but removing them completely from connection with the circulatory system.

For fundamental experiments on the elementary tissues, and for work with drugs in pharmacology, it is of very great importance to have a myograph that is simple and inexpensive and which does not involve disturbing the circulatory system. The importance of the last point can not be over-estimated. The circulatory system not only brings a continuous supply of nutriment and oxygen to the muscle, but carries from the muscle the accumulating products of fatigue and thus enables the muscle to do much more work than would otherwise be possible.

In pharmacologic experiments it enables the experimenter to watch the influence of drugs carried to the muscle in the normal way, rather than applied in some artificial and abnormal way.

The frog-board myograph is a new form of myograph so constructed as to permit all experiments usually performed on the gastrocnemius-sciatic preparation without exposing the active tissues to the atmosphere or disturbing the blood supply. The instrument is constructed as follows: An oaken base about one-fourth of an inch in thickness supports a cork plate of equal thickness; the cork plate presents a surface about 10 by 25 centimeters. (Fig. 1.) The lever holder at the end of the plate is constructed of thin sheet steel and slips from side to side in order to bring it opposite either leg of the frog.

The distance from the axis of the elbow-lever to the thread-eye is the same as that to the weight, therefore,

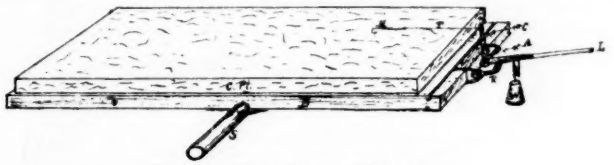

FIG. 1.—FROG-BOARD MYOGRAPH.

S, the shaft which is clamped to the upright stand; B, the oaken base; C. Pl, the cork plate to which the frog is fixed; A, the lever axis and slide lever-holder; W, the weight; L, the light lever about 20 cm. in length; H, the tendon hook which is joined through the thread T, which passed through the eye and under spring catch (c); R, the lever rest.

the weight lifted by the muscle is the actual weight hung upon the weight link. When the lever passes a little below the horizontal position it comes into contact with the rest. This rest can be used in "after-loading" a muscle. For further description of the instrument, see the figure and its description.

In the use of the frog-board myograph one proceeds as follows: The frog is pithed and pinned, dorsum up, on the cork-plate, with the feet at the lever end. The tendo-achillis is exposed and loosened from the tarsal ligaments, the tendon-hook (H) is passed through the tendon and the length of the thread adjusted at (c). The skin on the thigh is opened to the extent of two centimeters and the biceps femoris muscle removed, the sciatic nerve carefully separated from the sciatic artery and placed on the insulated electrodes. Stimulation may be made from time to time for a period of several hours before the preparation becomes exhausted.

SUMMARY.

1. The frog-board myograph is a convenient and inexpensive myograph especially adapted for work in general physiology and in pharmacology.

2. Its advantages over other similar instruments are as follows:

I. The muscle-nerve preparation can be made in at most one-fourth the time required for the classic preparation.

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II. The muscle and nerve are not exposed to atmospheric changes.

III. The circulation of the tissues is not disturbed. This has the advantage (1) of permitting the study of the action of drugs on muscle-tissue under normal conditions, (2) of studying fatigue without the accumulation of fatigue products under abnormal conditions.

THE MANOMETER TAMBOUR.

The second piece of apparatus to which I propose to call your attention is the manometer tambour (Fig. 2).

A very large number of research problems require the recording of blood pressure of the animal—rabbit or dog—under observation. In the physiologic or in pharmacologic laboratories where such observations are in progress almost daily, it is not difficult to get very satisfactory results with the classic apparatus, which consists of a mercury manometer whose proximal tube (p) is joined through the medium of pressure tubing (p t) to the canula (c), the pressure tubing being interposed at (T) by a T-tube, one limb of which passes to the reservoir containing a one-half saturated solution of $MgSO_4$ or some other agent for retarding coagulation. Into the distal limb of the manometer (d) there is fitted, in the classic apparatus, a float which rests on the mercury, following more or less accurately the variations in the level and carrying a vertical rod which slides through a guide in the upper end of the distal limb and bears at its upper extremity a horizontal reed, bearing at one end a tracing point.

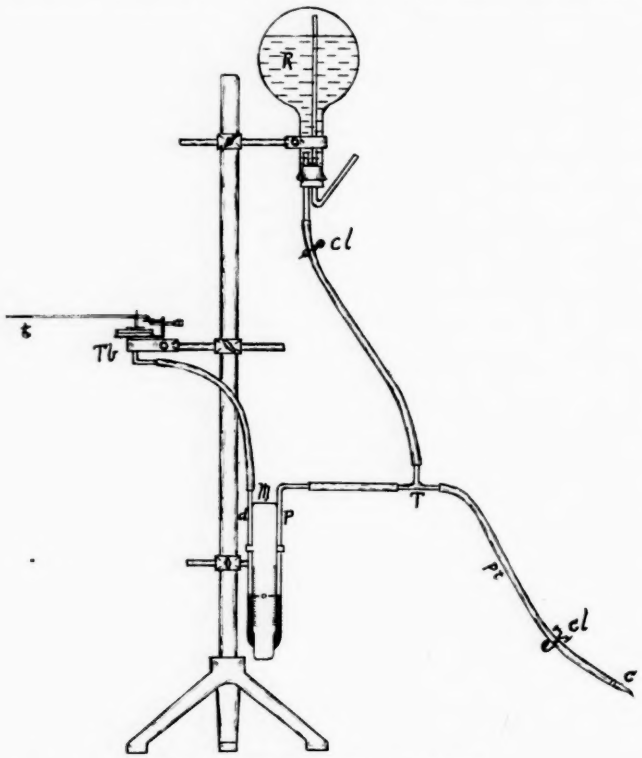

FIG 2.—THE MANOMETER-TAMBOUR.

M, manometer; Tb, tambour; R, reservoir filled with ½ sat. sol. $MgSO_4$; T, T-tube; Pt, pressure tube; Cl, clamp; C, canula; P, proximal limb of manometer; D, distal limb of manometer; T, tracing point of tambour lever.

There are two serious difficulties with this float. First, it is likely to fail to work properly just at the time when you are most anxious that there should be no hitch in your observation, though if the apparatus is in almost daily use this difficulty is not a serious one. The serious objection against the float is, that it does not follow accurately the movement of the mercury. The mercury starts up a little before the float does, and the float itself has so much inertia that the actual movements of the mercury are not shown at all by it. In order to overcome this difficulty, and to be able to record accurately the movements of the mercury meniscus, the following variation of the classic apparatus was contrived.

A small tambour was joined to the distal end of the manometer by a piece of pressure tubing and supplied with a very delicate tracing lever which magnifies the movements of the membrane 10 or 20 times, as desired, the levers being variable in the construction of the instrument. The surface of the tambour should not be larger than 15 mm. in diameter. The diameter of the mercury meniscus should probably be not less than 3 mm. in diameter. With this ration between the two surfaces and the levers multiplying 10 to 20 times, the most beautiful arterial pressure tracing can be obtained, showing not only the respiratory and percussion waves, but also the dicrotic wave clearly superimposed on each cardiac wave.

This apparatus, as above described, has one limitation which may, for certain kinds of work, seem to be a disadvantage. The pressure tubing leading from the distal end of the manometer to the tambour (Tb) is not attached to the manometer until after the rise of the mercury in the distal tube following the removal of the clamp (cl). After the tambour is attached to the manometer every movement of the mercury is shown by corresponding movements of the tracing point (t). Should there be a sudden rise or sudden fall of pressure, it will be instantly and clearly shown by corresponding rise or fall of the tracing. Should there, however, be a very gradual rise or a very gradual fall, owing to physiologic changes in the tonus of the blood vessels, for example, or perhaps by the gradual action of some drug on the animal under observation, this will not be shown by corresponding rise and fall of the tracing. It will, however, be shown by the stand of mercury in the distal limb of the manometer, and this may be easily read off or noted from time to time.

To offset this slight disadvantage, one has the two advantages above mentioned, namely, accuracy of the tracing of all the quicker movements of the mercury and the assurance that one's apparatus will always work.

PATHOLOGY AND CLINICAL HISTORY OF AMEBIC DYSENTERY.*

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PATHOLOGY.

The alterations found in the bodies of those dead of amebic dysentery vary greatly, depending on the time that the disease has existed, the extent of the intestinal lesions, and the complications that have arisen during the course of the malady—some lesions being always found, while others are encountered with greater or less frequency. Among the most common of these is emaciation, which, especially in chronic cases, is often extreme. On opening the abdominal cavity peritonitis is occasionally encountered, which may be very mild, and frequently extends but little beyond that portion of the membrane that surrounds the large gut, but in those

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee: Drs. J. M. Anders, Frank A. Jones and W. S. Thayer.

cases where perforation has occurred a general suppuration of the entire cavity is found, except it be that adhesions of such a character have previously formed that the contents of the intestine are poured into a closed sac cut off from the general peritoneum; under such circumstances the condition is practically one of abscess formation. Though not invariably the case, the large gut is usually adherent to the coils of the small intestine or other viscera, and it is sometimes united to the walls of the abdomen by newly-formed bands of fibrous tissue; in some cases neighboring portions of the large intestine are united to each other. As a result of these adhesions the colon is often drawn from its normal position, and in some cases is greatly distorted. It is generally found that the walls of the gut are so thinned in places that it is only with the greatest care that it can be removed without being torn. On opening the intestine it is found that its coats are much thickened in some situations, and that on its surface there are numerous ulcers. The extent of the ulceration varies greatly in different cases, it being sometimes slight and confined to one portion of the gut, while in other instances the entire mucous surface of the viscus is denuded; it is, however, fortunately true that in fully half of the cases the lesions do not extend upward beyond the beginning of the transverse colon. The ulcers vary in size from those that are microscopic to others that cover a large portion of the mucous surface of the gut; as a rule, however, they are separated from each other by more or less normal mucous membrane. The edges of the ulcers are prominent and project above the general surface. The floors of these lesions are ashen-gray in color, and are almost always covered by a layer of mucus, in which there are particles of undigested food and masses of sloughing tissue; when examined under the microscope this mucus is found also to contain many swollen cells, leucocytes, amebæ and myriads of bacteria. The edges of the ulcers are practically all undermined, and not uncommonly, it is said, fistulous tracts connect them when near each other, though I have never myself been able to demonstrate this. These lesions may be rounded or irregularly shaped, but more commonly they are oblong, and lie transverse to the long axis of the intestine. It is rather curious that these portions of the gut that lie nearest the attachment of the mesocolon are, as a rule, but little affected. The mucosa between the ulcers is usually somewhat reddened, but it may appear entirely normal.

The intestinal lesions of this disease are almost always confined to the large gut, but now and then the process extends up into the small intestine for a short distance. I saw the appendix involved in one case; the small gut was also affected. It is remarkable that in cases where recovery occurs—even in instances where the disease was severe, and had existed for some time—the large intestine after a short time rarely shows macroscopic evidence of the pronounced ulceration that must have existed.

Our knowledge is very meager as to the exact nature of the finer alterations that occur in the intestine in the early stages of amebic dysentery in the human being, but the changes that take place in the large gut of the dog have been studied by several investigators. The sequence of events that occur in the puppy after having received an injection of material containing living amebæ seems to be briefly as follows:

Collections of amebæ occur on the mucous surface of the intestine, and quickly thereafter the epithelial cells on which these organisms lie exhibit catarrhal changes and drop off from their basement membranes; the blood vessels in the tissues below dilate, and the lymphatics become enormously distended with fluids. There is an increase in the number of lymphoid cells, and many of the large phagocytes of Metchnikoff collect in the part; simultaneously some of the dilated blood vessels burst, and we find as a consequence that there are many red and white cells in the affected area. Following this, the basement membrane on which the desquamated epithelial cells originally lay breaks down and disappears, and the blood that was free in the tissues at once finds its way to the surface and becomes mixed with the mucus and other materials present within the lumen of the gut. Necrotic changes in the tissue surrounding the crypts quickly follow, and these structures fall out, leaving ulcers that extend down to the muscularis mucosæ. The coat just named offers considerable resistance to the downward progress of the ulceration, but it eventually gives way, and the process passes into the submucosa. The tissues composing this coat in their turn undergo necrotic changes, which extend rapidly down to the circular muscular layer, and laterally in every direction. The walls of these ulcers are not made up of the pre-existing tissues of the part, but are composed of enormous collections of phagocytes of Metchnikoff, and red blood cells, with a smaller number of polymorphonuclear leucocytes and lymphoid cells, and a few plasma cells.

This brings us to the conditions practically always found in the human being dead of amebic dysentery. When we examine the intestine microscopically it is found that all of the characteristic lesions extend into the submucosa, though in rare instances superficial ulcers do occur, which, however, appear not to have any connection with the predominant process, and will therefore not be considered. The mucosa that lies at a short distance from the true ulcers, as a rule, shows astonishingly little change, but as the edges of the lesions are approached the cells lining the crypts often exhibit decided catarrhal change, and the blood vessels in the surrounding tissues are frequently considerably dilated. Amebæ are but seldom found either within the lumina of the glands or in the tissues that lie between them. At the edges of the ulcers the mucous coat generally terminates abruptly, but now and then this layer extends outward over the surface of the ulcer to a greater or less distance; this outgrowth of mucous tissue is composed mainly of deformed and only partially developed crypts that do not become attached to the underlying tissues; these bands are sometimes reflected back over the normal mucosa. In rare instances the process of healing over of the ulcers may be observed; this consists in the epithelial cells growing downward from the edges over the surfaces of the ulcers, and ultimately covering them with a single layer of cells, no new crypts being formed. The floors of the open ulcers are usually formed by one or the other of the muscular coats—generally the inner—though the necrotic process not uncommonly extends completely through these layers, and we find only the thickened peritoneum interposing between the abdominal cavity and the lumen of the intestine. Irrespective of the depth to which the ulceration has extended the surfaces of the lesions are always made up of partially necrotic tissue, in which there are multitudes of bacteria, many amebæ, and great numbers of cells. In these situations swollen bands of fibrous tissue that appear hyaline and take acid stains intensely are frequently

found; they contain no recognizable nuclei. It is noteworthy that the elastic tissue fibrils are quite as well, if not better, preserved in these areas than the fibrous structures; this is exactly opposite to what occurs in the dog under similar circumstances, and may account for the great rapidity with which the tissues in these animals break down. Just beneath the surfaces of the ulcers the pre-existing tissues of the parts are found in varying stages of necrosis depending on the depth, and these structures are separated by accumulations of fluids between them and the presence of a vast number of cells; these consist of polymorphonuclear leucocytes, lymphocytes, plasma cells, connective tissue cells, mast cells and red-blood corpuscles. Amebæ are commonly present in these areas. The blood vessels are for the most part dilated and filled with blood; in many instances the vessels contain thrombi. The vessel walls are frequently necrotic, particularly on the side nearest the ulcers; amebæ are often found within their lumina. The lymph spaces and lymph channels are universally distended with fluids and cells. The epithelial cells that formally lined these vessels become greatly swollen, and almost without exception desquamate, and then lie loosely within the lumina of the vessel; mixed with these cells red blood corpuscles, leucocytes and amebæ are frequently found. Lower down in the walls of the gut these alterations become less pronounced, but the proximity of the pathologic process is usually evidenced by the presence here and there of small collections of lymphocytes, and great numbers of mast cells are scattered throughout the tissues. Newly formed masses of fibrous tissue are not uncommonly found at a considerable distance from the point of ulceration. Where the necrotic changes have passed through the muscular layers the subperitoneal coat is always greatly thickened, and the tissues composing it exhibit changes similar to those that have been described as occurring in the more superficial portions of the intestinal wall. While it is true that the amebæ, as a rule, are rather behind than in advance of the areas of greatest pathologic change, they are not uncommonly encountered at considerable distances from the edges of the ulcers. Under these circumstances I have been struck with the fact that they are usually acidophilic, and that their nuclei are not colored by basic dyes. Furthermore, numerous bacteria that stain well are found within them, and in many instances the parasites are undergoing disintegration, and the micro-organisms that they contain are being disseminated into the surrounding tissues. The changes that occur in the tissues at the lateral margins of the lesions resemble, on the whole, those that take place at their bases, with the exception only that the structures composing the submucosa are much more susceptible to the action of the poison of this disease than are those that make up the remaining coats of the intestine; this is strikingly shown by the resistance of the muscularis mucosa, which always projects out over the necrotic submucosa, and supports the overlying mucous coat. It is thus seen that the undermined edges of the ulcers in this, as in other intestinal diseases, are due to the power of the muscular coats to resist the poisons that produce the pathologic change. Fibrin is frequently present in the tissues of the submucosa in the neighborhood of the necrotic areas. In the lateral margins of the ulcers amebæ are numerously present, more so than in any other part of the intestinal walls; they lie in the necrotic structures, and somewhat within the tissues that are more or less normal, but do not penetrate very far as a rule. The changes in the tissues are always in advance of the great body of amebæ, this again clearly showing that if they be in reality the cause of the pathologic process they must necessarily act by producing some poison that is absorbed into the tissues. It is noteworthy that the lymph nodes that are present in the mucosa and submucosa show no marked increase in size, and exhibit, as a rule, but little alteration until the diseased process actually includes them, when they become necrotic and break down just as do the other structures.

Following acute amebic dysentery—and strangely enough appearing to develop only during the first few weeks of the disease—abscess of the liver may occur. These lesions may be situated in any part of the liver, and I do not think from a study of the literature that they are so strictly solitary as they are generally supposed to be, but miliary abscesses, such as occur in pyemia, very rarely take place. Any part of the liver may be involved, but the convex surface of the right lobe is most commonly affected. These abscesses, if not interfered with surgically, may rupture into the intestine or neighboring cavities, and may even open externally; there seems, however, to be a marked predisposition on their part to penetrate through the diaphragm and ultimately break into the lung. When this occurs an abscess of the lung develops, the contents of which eventually discharge through the bronchi. The contents of the liver abscess is made up of rather dark, pus-like material which on microscopic examination is found to consist of a very few cells, a great amount of granular debris, and numerous amebæ. Amebæ are always found in these abscesses—this being even the case in dogs where these lesions follow experimental dysentery. The walls of the liver abscesses may consist merely of disintegrating liver substance, or may be made up where the lesion has existed for some time, of a thick mass of fibrous tissue containing numerous lymphoid and plasma cells. It is noteworthy that the amebæ never penetrate into the walls of the liver abscesses, but are very frequently found just along the edges. The liver cells in the vicinity of the lesions show a very peculiar degenerative change which consists in the formation of nucleated bodies that bear considerable resemblance to amebæ. Bacteria are usually found in and around the walls of these abscesses. The blood vessels in the area surrounding the lesions usually contain no blood, but are filled with a granular detritus. In some instances areas of rhexis occur around the edges of the abscess.

It appears to me that there can be little doubt that the amebæ reach the liver by means of the portal circulation, though it has been assumed by some that the organisms get into the general peritoneal cavity, find their way to the liver, and burrow into its substance. The fact that amebæ are very frequently found within the blood vessels of the intestinal wall, even when no thrombosis exists, would seem to make it necessary that they would inevitably reach the liver substance.

SYMPTOMATOLOGY.

Amebic dysentery is a disease that frequently sets in acutely, but almost, if not quite, as commonly the beginning is gradual. In the former class of cases there is nothing in the symptoms at first that distinguishes the disease from the ordinary acute dysentery, which is so extremely common in the southern part of the United States in the spring and summer. In these instances the disease begins with diarrhea, quickly followed by stools of a dysenteric character; the patient complains of pain and tenesmus in the abdominal region,

and there is at the same time a decided quickening of the pulse and some fever. In the course of a few days or weeks the severity of the symptoms usually somewhat subsides, but in exceptional instances the patient slowly grows worse, and death occurs in from two to three weeks. In those cases where improvement follows the acute onset the disease seems always to become chronic, and it is in this stage that the patient usually consults the physician. Where the disease begins gradually the sufferer is rarely able to state with definiteness the time when his trouble began; he remembers only that about a certain time he began to note that his bowels would be loose for a day or so, this being followed by constipation. There were a number of such periods of alternating constipation and looseness of the bowels, but it was observed that the period between the diarrheal attacks became less and less, until finally a condition was reached where there was several movements of the bowels in twenty-four hours. About this time the patient usually begins to observe that the stools contain some blood, and he has slight attacks of pain and tenesmus at the time that the bowels act. At the end of a few weeks the symptoms in every way resemble those that are encountered at an equal period of time from the onset in those instances where the disease began acutely. It is in this stage, after the malady becomes chronic, that it generally comes to the notice of the clinician, as in the class of persons who suffer from this affection a physician is very rarely called in merely for an acute attack of bowel trouble. After the disease becomes chronic it runs an extremely irregular course, sometimes getting well without any apparent cause in a comparatively short period of time, while in other instances it exists for many years. Some time ago Dr. Reginald Fitz of Boston wrote me that he had under his care a patient who had suffered with this malady since the Civil War, and I have myself seen many instances where the disease continued four, six and even eight years. Though somewhat arbitrary, for convenience sake, the affection may be clinically divided into several types, it being understood, however, that either of these may pass into the other at any time, and without any apparent cause:

1. *The Very Mild Form.*—The general health remains fairly good, there is no fever or acceleration of the pulse worthy of mention, and the appetite is good. The number of stools vary from two to six in twenty-four hours. This is the form almost always seen in children.

2. *The Moderately Severe Form.*—In this type of the disease the general health is never good, the appetite is, as a rule, poor, and there is considerable loss of flesh. The pulse is increased in frequency and the temperature goes up toward evening. The number of stools vary from six to twenty in twenty-four hours.

3. *The Very Severe Form.*—In this form of the disease there is great emaciation and loss of appetite, with sometimes nausea and vomiting. The temperature is irregular, but in the afternoon is usually above normal, and the pulse is weak and decidedly accelerated. The extremities are cold, and profuse sweating is quite common. Hiccough is frequent. The stools are watery, and consist very largely of blood and mucus, in which sloughs are sometimes found. The number of stools vary from twenty to fifty in twenty-four hours. It is very remarkable how patients may remain in a condition of this kind for days, and even weeks, and finally recover. It seems to be a peculiarity of all intestinal affections that death may be very closely approached without a fatal termination actually occurring.

There are very remarkable fluctuations in the severity of the symptoms in all forms of the malady, it being not an uncommon observation that the disease passes quickly from the mildest type to the most severe, and vice versa. While we can not always account for an increase in the severity of the clinical course of this affection, it is true that bodily exertion is often followed by a decided exacerbation in the symptoms, and the taking of certain articles of food that disagree with the sufferer frequently occasion distressing results; alcoholics seem to be especially badly borne—the taking of beer being particularly injurious.

Among the symptoms that are occasionally encountered may be mentioned a constant aching in the back that is not relieved by the recumbent posture, a tearing sensation in the region of the colon, great uneasiness in the stomach, and an urgent desire to defecate immediately following the taking of food and edema of the face and feet. In the mild form of the disease the urine is practically normal, but in the severer types albumin is occasionally present. I have examined repeatedly the urine of some of my worst cases for peptone by the method of Hoffmeister, with negative results. In the severer forms of the disease the chlorids are often diminished, and in the worst cases may be totally absent. Their reappearance after having been absent from the urine is a most favorable indication. In the milder forms of the disease the stools may appear almost normal in every way, but a careful inspection will usually reveal the presence of small particles of bloody mucus upon the surfaces of the fecal masses. In the severer types of the malady the movements contain considerable quantities of mucus and blood, and are quite soft in consistency. In the worst forms the fecal discharges consist almost entirely of blood and mucus; stools of this character, occurring in a chronic intestinal affection, I consider entirely characteristic, and even in the absence of a microscope I should feel but little hesitation in making a diagnosis of amebic dysentery. In some cases just before death the quantity of mucus becomes decidedly lessened, the stools consisting of an extremely thin, dark, blood-stained fluid. The feces are, as a rule, alkaline in reaction, but are occasionally slightly acid in mild cases. On microscopic examination the stools are found to consist of partially digested food, much mucus and blood, pus, large epithelioid cells, multitudes of bacteria, and varying numbers of amebæ. Cercomonas are sometimes encountered.

The most important of the complications of amebic dysentery is liver abscess; out of ninety-five cases this has occurred fifteen times—once in a boy. As has been before stated, this complication always arises during the acute period of the disease, there being no instance with which I am acquainted in which it occurred later. It appears to be more common in the northern portions of our country than in the south, as I myself have seen this in only two instances out of fifty-two cases. It is, however, quite likely that the proportion is greater than this, even here, as almost all of my cases were seen after the disease had become chronic. The symptoms of liver abscess are by no means always characteristic, there being many instances recorded where the disease lay latent for a considerable period of time without it being suspected. The usual symptoms are a throbbing or aching pain in the region of the liver, which may be reflected to the right shoulder, chills and fever of an irregular character, and rapidity of the pulse; the appetite fails, the tongue becomes coated, the patient rapidly loses flesh, and jaundice is occasionally encountered. On physical ex-

amination the liver is found to be enlarged; a fullness or marked protuberance sometimes develops at the lower margin of the ribs.

When the liver abscess opens into the lung, as it most frequently does, abscess of this organ develops. The symptoms of this condition are the usual signs of consolidation in the lung, with cough and the expectoration of a reddish-brown fluid, which on examination with the microscope is found to contain amebæ. This complication is rare, it having occurred in only three instances out of ninety-five cases of amebic dysentery.

Perforation of the intestine with peritonitis is an occasional complication of this disease; the symptoms are those that are usually observed in cases of this kind. It has appeared to me that the inflammatory phenomena are not so marked as in the septic peritonitis that follows operations.

Appendicitis has been observed in one case. The symptoms would naturally be those commonly observed where this organ becomes diseased, but in the instance to which I refer the clinical course was so mild that the true condition of affairs was not suspected during life.

A STUDY OF THE CASES OF AMEBIC DYSENTERY OCCURRING AT THE JOHNS HOPKINS HOSPITAL.*

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It is not the intention in this paper to attempt a complete historic account of amebic dysentery. I wish merely to recall the fact that it was Lösch,[1] of St. Petersburg, who in 1875 was the first to give an accurate description of amebæ in the stools of a dysenteric patient. Although Lambl and Cunningham had previously described amebæ in the stools of infants and cholera patients, it remained for Lösch to associate the amebæ with dysentery in the relation of cause to effect. It was also Lösch who gave to the organism the name *Amœba coli*, a name that is still in very general use. Kruse and Pasquale advocate the adoption of the term *Amœba dysenteriæ*, first suggested by Councilman and Lafleur, to designate the pathogenic ameba, reserving the name *Amœba coli* (Lösch) for the non-pathogenic ameba occasionally found in the normal healthy intestine. In America, amebæ were first found by Dr. Osler,[2] who observed them in 1890 in the pus of a liver abscess originating in Panama and operated on by Dr. Tiffany, of Baltimore. I purpose attempting to give as concise an account of the disease as possible, basing the description largely on our observation of the disease and its complications as seen at the Johns Hopkins Hospital.

RELATIVE FREQUENCY.

From May 15, 1889, the date of the opening of the Johns Hopkins Hospital, to May 1, 1903, or for a period of nearly fourteen years, there have been in all departments 120 cases of amebic infection. This was out of a total of 42,614 admissions to the institution. Of the 120 cases, 118 had been admitted to the medical wards. The total number of medical patients during this period was 15,817, so that the medical amebic cases constituted 0.74 per cent. of the total medical admissions. Of the two remaining cases, which were admitted to Prof. Halsted's surgical wards without having been medical cases before or after, one had an amebic abscess of the liver and the other an amebic abscess of the floor of the mouth. It may be safely said that these 120 cases represent pretty accurately practically all the cases of amebic infection that have been admitted to the hospital. It is doubtful whether very many have escaped observation. Since Dr. Osler's first observation, in 1890, and the appearance of Councilman and Lafleur's[3] classical monograph on the subject, in 1891, careful examination of the stools and contents of hepatic abscesses have been made in all suspicious cases. Excluding the case of abscess of the lower jaw containing amebæ, the remaining 119 cases were made up of amebic dysentery or amebic hepatic abscess cases. Only cases in which the histories positively state that amebæ were found are included in the series. Three cases in which a diagnosis of amebic dysentery was made, but in which there is no record in the history of amebæ having been found in the stools, have been omitted. These were in all likelihood actual amebic infections, however, the failure to note the presence of amebæ being an oversight. So also in connection with hepatic abscesses, only those in which there is a definite statement that amebæ were found in the contents of the abscess or in sections of the abscess wall have been included. Those in which no amebæ were found, but which proved sterile on bacteriologic examination (a fact pointing rather strongly toward an amebic origin), have been omitted.

ETIOLOGY.

After the discovery of *Bacillus dysenteriæ* (Shiga) as a cause of epidemic and sporadic dysentery, there was for some time considerable doubt expressed as to whether the *Amœba dysenteriæ* played such an important rôle in the causation of amebic dysentery. It was thought that possibly the intestinal ulceration was first started by the Shiga bacillus, and that the ameba was a later invader, and played a rather secondary rôle. Those who have had most experience with the dysentery bacillus, including Flexner among others, state that there is unquestionably a form of dysentery which is quite independent of that produced by that organism and actually due to the inroads of the *Amœba dysenteriæ*. We can again, therefore, use the term amebic dysentery with full confidence. The pathogenic agent is unquestionably the *Amœba dysenteriæ*.

This parasite is placed by Leuckart in the class *Rhizopoda* of the *Protozoa*. It is a unicellular organism, varying in size between 8 and 37 microns, according to Braun,[4] but usually between 12 and 26 microns, the average diameter being about 20 microns. Whereas in different cases the amebæ may vary greatly in size, in the same case they are usually of a fairly uniform dimension. The body of the ameba consists of two portions; the inner granular portion is called the endosarc or entoplasm; the outer, clearer, hyaline portion is termed the ectosarc or ectoplasm. The division into these two parts is not clearly made out in the resting stage, but becomes very distinct in the actively motile organisms. The greater part of the body of the cell is comprised of the finely or coarsely granular endosarc. This portion often contains several vacuoles of varying size. A

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1. Lösch: Virchow's Archiv, Bd. lxv, 1875.
2. Osler: Johns Hopkins Hospital Bulletin, vol. i, 1890.
3. Councilman and Lafleur: Johns Hopkins Hospital Reports, vol. ii, 1891.
4. Braun: Die Thierischen Parasiten des Menchen, Zweite Auflage, p. 44.

nucleus can occasionally be made out in the fresh unstained ameba; more distinctly in the stained preparations. It averages about 6 microns in size, and is situated in the endosarc, near its border. A nucleolus can be recognized in the stained specimens. The ameba frequently contains foreign bodies. Red blood cells constitute one of the commonest inclusions. The number of red cells contained may reach as high as fifteen or twenty. Included red cells are apparently more numerous in acute cases. Micrococci, bacilli and granular debris are not infrequently seen within the body of the cell.

Probably the most striking thing about the *Amœba dysenteriæ* is its motility. This may present itself in two forms, either a change in shape or a change in place. The change in form is also of two kinds. A pseudopodium, consisting of a process from the hyaline ectosarc, may be seen to be protruded, and in a few minutes attracted into the body of the cell again. A more remarkable change in form is occasionally observed. This consists in the sudden throwing out of a process of the ectosarc, which instantaneously partially or completely encircles and envelopes the cell. The movements of locomotion are most interesting to watch. They seem almost purposive in their character. A hyaline process is thrown out from one border of the parasite, and the granular endosarc, with its inclusions, rapidly flows into the process. By the continual throwing out of a process from the same side of the cell an ameba in a very few seconds will cross the field of the microscope. In some of these very actively motile parasites it is almost impossible to differentiate ectosarc and endosarc, the ameba changing its place by a rapid rolling or flowing motion. In a general way, it may be stated that the more acute the course the more rapid seem to be the movements of the amebæ. When a satisfactory portion of mucus has been obtained, almost the entire field with the oil immersion lens may be seen to be comprised of very actively motile organisms. Cold tends to retard the activity of the parasites, although they will remain fairly active, often for hours, at the room temperature. When the temperature falls below 75 F. the ameboid movements cease, but they may be again started by gently raising the heat to the body temperature by carefully warming the slide over a spirit lamp. With a warm stage, the amebæ will retain their motility almost indefinitely. The activity of the ameba is immediately arrested by a solution of quinin of the strength of 1 to 5000. During the process of death of the organism vacuolization of the cell occurs.

It is not known definitely how the ameba reproduces itself. By analogy, however, one is lead to assume that this takes place by fission or sporulation. The ameba is stained by various basic anilin dyes. The staining methods, which will not be given here, are not perfectly satisfactory, although there is no difficulty in recognizing the organism in stained sections of an intestinal ulcer or wall of an hepatic abscess. Mallory and Wright[5] advocate thionin as a differential stain. Their method aids very materially in differentiating amebæ in sections from mastzellen, with which they are liable to be mistaken. With their thionin stain the nuclei of the amebæ and the granules of the mastzellen are stained brownish-red; the nuclei of the mastzellen and of all other cells are stained blue.

Resistant forms of amebæ, similar to the gamete forms of the malarial parasite, have been noted by Cunningham, Grassi and Calandruccio, and by Quincke. These "encysted amebæ" are believed by these observers to be necessary, under certain conditions, for the transmission of the disease from one person to another.

The ameba is very difficult to cultivate. Kartulis used straw-infusion, and claimed to have been able to grow the parasite. Objections were later made to his technic, as it was believed that his positive results may have been due to accidental contamination. Celli and Fiocca[6] succeeded in obtaining pure cultures of the ameba. They describe two phases in the life cycle—the ameba form and the cyst form—and they state that the amebæ multiply by division.

(*a*) TYPES OF AMEBA FOUND IN THE STOOLS.

It is now well recognized that amebæ may occur in the stools of healthy persons or in the discharges of patients suffering from other diseases, without their having in these cases any pathogenic action. Thus they have been found in cases of chronic diarrhea, intestinal tuberculosis, typhoid fever, hemorrhoids, and other affections.

As a result of careful study of the amebæ found in the feces, supported by inoculation experiments, Quincke and Roos[7] have been led to the conclusion that there are three different varieties of amebæ in the stools of human individuals. The names which they give these different varieties, with their pathogenic actions, are as follows:

1. *Amœba intestini vulgaris,* 40 microns in diameter, coarsely granular, and not pathogenic to either human beings or cats.

2. *Amœba coli mitis,* the same size, pathogenic for man, but not for cats.

3. *Amœba coli* (Lösch) or *Amœba coli felis,* up to 25 microns in diameter; pathogenic for both man and cats, and producing dysentery in both.

It will be seen that the second variety, the *Amœba coli mitis,* which is pathogenic for man only, is much larger than the third variety, the ordinary *Amœba coli* (Lösch).

In our series of 119 cases of dysentery we have no positive evidence that we were dealing with any other than the usual *Amœba dysenteriæ.* In one or two cases, owing to the average diameter of the parasite found being rather smaller than that of the ordinary ameba, it was thought that we might be dealing with a special type of the parasite.

(*b*) DISTRIBUTION OF THE AMEBÆ IN THE HUMAN BODY.

The usual habitat for the *Amœba dysenteriæ* is in the large intestine. Where complications follow, it may be found in other situations. Thus it occurs in the contents of liver abscesses, in the sputum of patients with hepato-pulmonary abscess, and in the pleural and peritoneal cavities when a liver or pulmonary abscess breaks into one or other of these. Other situations in which amebæ have been found are as follows:

1. In the buccal cavity—the so-called *Amœba gingivalis* of Gros and *Amœba buccalis* of Sternberg. These forms were found in the tartar scraped from the teeth, and are regarded as being identical with the *Amœba dysenteriæ.*

2. In the urogenital tract. In 1889, Baelz described, under the name of *Amœba urogenitalis,* large, actively motile amebæ in the urine and vagina of a young woman, 23 years of age, who died of pulmonary tuberculosis. Other similar observations were reported.

5. Mallory and Wright: Pathological Technique, p. 293.

6. Celli and Fiocca: Centralblatt f. Bakteriologie, vol. xv.

7. Quincke and Roos: Berl. klin. Wochenschrift, Bd. xxx, 1893, p. 1089.

3. In pieces of necrotic bone. Kartulis observed amebæ in the pus from an area of necrosed bone involving the lower jaw of an Arab, aged 48.

4. In an abscess in the floor of the mouth. This observation was reported by Flexner.[8] The case occurred in Dr. Halsted's wards in the Johns Hopkins Hospital, and, as already stated, is the only one in this series of 120 cases that was not an amebic dysentery or amebic hepatic abscess case. The patient was a male, white, aged 62 years. The amebæ were obtained from the contents of the abscess at operation. Flexner believed that this form of the organism was closely allied to, if not identical with, the *Amœba dysenteriæ*.

(*c*) SOURCE OF THE AMEBÆ AND MODE OF INFECTION.

Very little is known regarding the source of the ameba and the mode of infection. We are still absolutely unfamiliar with the life history of the parasite outside the body. Inoculation experiments by way of the mouth, with the possible exception of those of Quincke and Roos, with the so-called encysted forms, have been entirely negative. It is highly probable that infection takes place by way of the gastro-intestinal tract, and that amebic dysentery is contracted in much the same way that typhoid fever is.

GENERAL ETIOLOGIC FACTORS.

(*a*) *Geographical Source of Infection in the Johns Hopkins Series.*—The term "tropical dysentery," for many years used almost synonymously for "amebic dysentery," has long been recognized as a misnomer. Amebic dysentery is not confined to the tropics, but often originates in the subtropical, even in the higher temperate zones. Sporadic cases occur in New England, and it will be remembered that last year Dr. Dock[9] reported before this Section a case which originated in Michigan. As the analysis of our cases shows, the disease occurs very frequently in Maryland and the bordering states. Of the 119 cases of amebic dysentery, the disease was apparently contracted in Baltimore in 83, and in the state of Maryland, outside of Baltimore, in 13 cases, or a total of 95 cases contracted within the state of Maryland; 2 in the District of Columbia; 8 in Virginia; 1 in West Virginia; 1 in North Carolina; 1 in Tennessee; 1 in Georgia; 1 in Alabama; 2 in Florida; 1 in Cuba; 1 in Brazil; 4 of doubtful source, the patients being sailors or travelers, and it being impossible to determine where the dysentery was contracted. It will thus be seen that the disease is very frequently contracted in latitudes as far north as Baltimore.

(*b*) *Age.*—The incidence of the disease in the various decades is shown by the following figures: There were 11 cases in the first decade; 8 in the second; 35 in the third; 29 in the fourth; 20 in the fifth; 11 in the sixth; 4 in the seventh; 1 in the eighth. It will be seen that the largest number of cases occurred in the third decade, 35 cases occurring betwen the ages of 21 and 30. The youngest patient was a male child 2 years 8 months old, and the oldest was a man 71 years of age. The analysis of the series regarding the question of age is of interest in showing the rather frequent occurrence of amebic dysentery in very young children. As stated, there were 11 cases, or 9.4 per cent. of the total, in the first decade, 6 occurring between the ages of 1 and 5, and 5 between 6 and 10 years. It should teach us to keep in mind the possibility that a chronic dysentery or diarrhea in young children may be of amebic origin. This fact was emphasized by Amberg[10] in a paper in which he reported five of the cases of amebic dysentery in children from Dr. Osler's wards.

(*c*) *Sex.*—There is much disparity in the relative prevalence of the disease in the two sexes, as illustrated by this series. There were 108 males and 11 females. It is possible that the out-door life of men render them more liable to infection, by drinking water containing amebæ or by conveying the parasite to their mouths on dirty hands.

(*d*) *Race.*—The series was composed of 107 white and 12 colored patients. Considering the fact that the proportion of whites to blacks in the hospital is about in the ratio of 7 to 1, it would appear that whites are a trifle more frequently attacked, as the proportion of whites to blacks affected was approximately 9 to 1.

(*e*) *Occupation.*—There was nothing in the consideration of the occupation of the patients to throw any special light on the source of infection.

CLINICAL TYPES.

Three groups of amebic dysentery may be made according to the severity of the intestinal symptoms. The cases may be classified as follows: 1. Dysentery of moderate intensity. 2. Grave or gangrenous dysentery. 3. Chronic dysentery. Owing to lack of time, and in order to avoid repetition, these three types will not be described separately. Moreover, the classification is a more or less arbitrary one, and cases may conform to one or other type at different periods. Thus a case of dysentery of moderate intensity may, and often does, become chronic, while a chronic case may take on acute manifestations and assume a gangrenous type.

SYMPTOMATOLOGY.

In many cases the onset is abrupt; in others it is more gradual. It is most acute in its onset in the gangrenous type, which is seen less frequently in the latitude of Baltimore than in the tropics. In the majority of cases the patient is rather suddenly seized with an attack of diarrhea. In a few hours, or a day or two, the dejections assume a dysenteric character, blood and mucus constituting the bulk of the movement. In the severest cases there may be as many as twenty or thirty such movements in the twenty-four hours. In the severe, acute gangrenous cases, large portions of sloughing mucous membrane may be passed. The appetite is impaired, and there may be nausea and vomiting in the initial stages. There is usually fever at the onset, the temperature ranging often betwen 100 and 102 F. When the cases become chronic the temperature may become subnormal. Frequently there is considerable abdominal pain and tenderness in the acute stages. The pain is most marked over the lower part of the abdomen, although it may be generally distributed. It is intermittent and of a colicky character, and usually is worse preceding the movements. In the chronic cases there may be no pain, excepting during the acute exacerbations. Tenesmus may occur, but it is rather the exception. This is explained by the fact that the lesions are usually most marked in the cecum and ascending colon, the rectum in the majority of cases being uninvolved, or only to a slight extent. The tenesmus in bacillary dysentery, on the other hand, occurs much more frequently, and is often very severe, owing to the rectum being usually much more extensively involved.

8. Flexner: Johns Hopkins Hospital Bulletin, vol. iii, 1892, p. 105.

9. Dock: THE JOURNAL of the American Medical Asoociation, 1902.

10. Amberg: Johns Hopkins Hospital Bulletin, vol. xii, December, 1901.

The degree of emaciation in some cases may be extreme, and is only surpassed by that observed in carcinoma of the esophagus. It is rather surprising, however, how little the general health of the hospital cases is affected in many instances, the color and general nutrition being extremely good. The majority of our cases were of moderate intensity, and in these the symptoms soon subsided under proper treatment. In a considerable percentage of cases the disease is subacute from the start, and gradually passes over into the chronic form. These cases are characterized by alternate attacks of diarrhea and constipation. In the periods of exacerbation the symptoms are rarely so severe as in the acute cases, and the diarrhea is usually readily amenable to treatment. These are the cases which are often so difficult to actually cure, and are the ones that so frequently apply for readmission to the hospital. Of our 119 cases, 19 were readmitted one or more times, with a relapse of the dysenteric symptoms. Of these, 12 were readmitted once; 14 twice; 1 three times, and 2 four times. One patient was admitted to the hospital five times in the short period of nine months; another was admitted five times during a period of one year and seven months. During the exacerbation there is pain, frequent passage of mucus and blood, and usually slight elevation of temperature. The patients, as a rule, do not feel very ill. Nutrition remains fairly good, and the marked emaciation usually observed in these chronic cases in the tropics was practically never seen in our hospital series. The numerous evacuations in these cases very frequently give way to constipation in a few days, when the patients are kept in bed and placed on bowel irrigations.

CHARACTER OF THE STOOLS.

As stated, in the earliest days of the attack the movements are very frequent in the severest cases—as many as twenty or thirty movements occurring in the twenty-four hours. These gradually diminish in number until, in fatal cases, there may be only three or four movements daily for the last few days preceding death. This diminution is in large part due to the gradual loss of expulsive power, brought about by the destruction of the muscular coat and the general edema of the bowel.

The earliest stools are small in amount; they consist, after the expulsion of the fecal contents, almost entirely of clear or slightly turbid and very viscid masses of blood-stained mucus, mixed with more or less bright blood. With the progress of the ulceration the stools become more copious, watery, and less homogeneous, and there is less blood. They contain, also, small, opaque or translucent, gelatinous, grayish-yellow masses, varying in size from a pin's head to a split-pea; these are fragments of necrotic tissue from the bases of the ulcers, and they contain amebæ. Where extensive and rapid sloughing occurs, the stools become greenish, grayish, reddish brown, or a mixture of these colors; their consistence is more watery, and they have a penetrating and horribly offensive odor. Not infrequently they contain large sloughs in the form of tough, stringy masses of a grayish or brownish color.

In cases of moderate severity with sudden onset the stools resemble those of the early stages of the grave form. The amount of blood and mucus is liable to be less. In the chronic form the stools are homogeneous, for the most part watery or like thin gruel, excepting during the periods of constipation, and of an earthy, yellowish-brown color. They contain fewer flakes of mucus and seldom any blood or necrotic fragments.

Microscopic Examination of the Bloody Mucus.—In the acute cases, besides the amebæ, whose characteristics have been already described, large numbers of red blood cells, few leucocytes, and a variable number of degenerated intestinal epithelial cells are seen. In a great many of our cases eosinophiles have been present in large numbers. They were found in the stools of all the five children with amebic dysentery reported from Dr. Osler's clinic by Amberg.[10] Charcot-Leyden crystals in rather small numbers are not infrequently present. They usually are most numerous where eosinophiles are present in large numbers. They occurred in four of Amberg's five cases. The stools also contain an innumerable variety of the ordinary intestinal bacteria.

Parasites Other Than the Ameba.—These are not infrequently associated with this organism in the stools. Ciliated infusoria—the *Trichomonas intestinalis* and *Cercomonas intestinalis*—are comparatively frequent associates. When they occur they are usually present in large numbers. One case in this series was of extraordinary interest in that, with the amebæ in the stools, there was also an intestinal infection with the *Strongyloides intestinalis*. This case was reported by Thayer, and is of particular interest in that it was the first case of so-called Cochin-China diarrhea or infection with the *Strongyloides intestinalis* observed in this country. The stools of this patient also contained large numbers of cercomonadids and trichomonadids.

CONDITION OF THE BLOOD.

Anemia of a mild secondary type usually exists, the reduction in the hemoglobin being more marked than that of the red corpuscles. At first thought it would seem natural to expect that with a chronic disease of this kind the red cells would be quite markedly reduced. This, however, was not found to be the case, the red cells, in fact, being nearly normal. In analyzing the blood counts in our records, I have for purposes of comparison kept the cases with amebic abscesses separate from the uncomplicated amebic dysentery cases. In the case of the red counts and the hemoglobin estimations, the averages were made from the first blood reports recorded in the histories after admission. In order to ascertain whether the leucocyte count was of any material value in determining the presence or not of an hepatic abscess, I have selected the highest leucocyte counts in both groups during their entire stay in the hospital. In many of the early cases no blood counts were made, while in the more recent cases in many instances a complete blood count was not made. This accounts for the averages of the red cells, leucocytes and hemoglobin being made from varying numbers of cases.

1. *Cases with Uncomplicated Amebic Dysentery.*—The average of the red cells in 38 cases was 4,802,000 per c.mm.; the average number of leucocytes in 43 cases was 10,600 per c.m.; and the average hemoglobin estimation in 36 cases was 63 per cent. In five cases the red cells were 6,000,000 per c.mm. or over. The comparatively high average of the red cells and the high count in these five cases are probably explained by a concentration of the blood resulting from the frequent bowel movements. It will be further seen that there was a considerable reduction in the hemoglobin and only a very slight leucocytosis. The average blood count then in the group was, red cells, 4,802,000; leucocytes, 10,600, and hemoglobin 63 per cent.

2. *Cases Complicated by Amebic Abscess of the Liver.*—The average number of red cells in 15 cases was 4,250,-

000; the average number of leucocytes in 15 cases was 18,350; and the average hemoglobin estimation in 13 cases was 66 per cent. The average blood count in this group was as follows: red cells, 4,250,000; leucocytes, 18,350, and hemoglobin 66 per cent. It will be seen that the red cells were only 750,000 lower than in the previous group. The leucocytosis was not a high one. The average was 7,750 higher than in the uncomplicated dysentery cases. There were two cases in which the highest count was under 10,000. The highest leucocytosis of all was 53,000.

Some observers hold that there is a great increase in the leucocytes in cases of amebic hepatic abscess and emphasize its importance in the diagnosis of such cases. Few, however, give counts supporting their statements. Although our series shows that the average leucocyte count in the amebic abscess cases is considerably above that in the uncomplicated cases, yet it is doubtful whether the leucocyte count is of any great value as a means of diagnosis. For instance, in the uncomplicated series there were ten cases in which the leucocyte count was above the average in the abscess cases. In two of these the counts were 40,000 and 47,000 respectively.

The average differential count of the leucocytes showed a relative increase in the polymorphonuclears. Considering the rather large number of eosinophiles seen in the stools in certain cases, it was thought that there might be some change in the relative percentage of these cells in the blood. With the object of determining whether there was such a change or not, Dr. McCrae made differential counts in a number of cases, but found the eosinophilic cells present in practically normal percentages.

COMPLICATIONS.

1. *Hepatic Abscess and Hepato-Pulmonary Abscess.*—Abscess of the liver is the most frequent and most serious of the complications of amebic dysentery. Of the 119 cases of amebic dysentery, 27, or 22.6 per cent., developed hepatic abscess. It is impossible to draw an accurate comparison between this percentage and the frequency of this complication in the extensive statistics of British and French physicians dealing with dysentery in India, owing to the lack of mention of the etiologic factor in the latter. In a hospital series, the percentage of hepatic abscess cases would probably be higher than would be the actual percentage outside hospitals, owing to the fact that the severity of the symptoms from this complication would cause the victim to seek admission, whereas the patient with dysentery alone would not be so likely to enter a hospital. There were 24 cases in males and 3 in females. According to decades, the cases occurred as follows: second, none; third, 10; fourth, 5; fifth, 7; sixth, 3, and seventh, 2. It will be seen that the largest number, 10, or 35.7 per cent. of the total cases, occurred between 21 and 30 years. The complication was also most frequent in this decade in Waring's more extensive statistics. Whether there were any special determining factors predisposing the patients to the development of this complication could not be ascertained. In one case direct traumatism in the hepatic region seemed a factor. The Anglo-Indian authorities lay great stress on the predisposing influences, particularly of alcohol, but also of condiments and high temperature.

Relationship to Onset of Dysentery.—The series was analyzed for the purpose of determining the length of time the dysentery had lasted before the symptoms of hepatic abscess manifested themselves. The result was as follows: In 3 cases there was no statement as to how long the dysentery had lasted. In 5, the intestinal manifestations had been so unimportant as to lead the patient to state on inquiry that he had not had diarrhea. Definite data are given in 19 other cases. In eight cases the dysentery had lasted one month or less. In one of these the dysentery and abscess symptoms had come on simultaneously, and in three others the dysentery had lasted only two weeks; in 1 case the dysentery had lasted two months; in 1, three months; in 2, four months; in 1, five months; in 2, six months; in 1, seven months; in 1, eight months; in 1, one year, and in 1, six years. The statement is sometimes made that hepatic abscess only develops in the very acute stages. The above analysis amply proves the contrary. It shows, however, that the largest number did develop within the first month after the onset of the dysentery. It must be emphasized that in one case the intestinal symptoms had lasted one year and in another case the remarkably long period of six years. Probably the most interesting fact of all is that in 5 cases the intestinal disturbance had not been sufficient to attract the patient's attention. In 22 of our 27 cases of hepatic abscess there was clinically or anatomically the existence of amebic dysentery, although in two of these cases there were only the scars of old ulcers. In two of the remaining five cases the intestine seemed normal at autopsy. This is an interesting fact, as it shows that the ulceration may be so slight as to cause no evidence after healing, and yet hepatic abscess may result in such cases. The other three cases were among those that recovered, and no history of dysentery had been obtained, amebæ being present, however.

Number of Abscesses.—The belief, formerly held, that amebic hepatic abscess is nearly always single, is no longer tenable. There may be only one large abscess, but not infrequently there are two or three fairly large abscesses, while, on the other hand, there may be thousands of minute abscesses, some almost indistinguishable to the naked eye. These minute abscesses have also been shown to contain amebæ. In 8 of the cases the abscesses were multiple. The most frequent situation for the single large abscess or for the multiple large abscesses is the upper and posterior part of the right lobe of the liver under the diaphragm. Autopsies were obtained in 22 of the 27 fatal cases of amebic dysentery. Eighteen of these cases were found to have hepatic abscesses. In 10 there was a single large abscess in the upper part of the right lobe.

Spontaneous Rupture of Abscess.—Amebic abscess of the liver may rupture spontaneously. In our series of 27 cases the abscess ruptured into the surrounding viscera or tissues as follows: Through the diaphragm, producing abscesses in the right lung or discharging themselves through the bronchi in 9 cases; into the right pleural cavity, causing an empyema in 3 cases—in one of these a pyo-pneumothorax was recognized clinically; into the duodenum in 1 case; into the inferior vena cava in 3 cases. In one case the abscess extended into the retroperitoneal tissues, involving the muscles of the back and the psoas muscle. In another an abscess in the lower part of the right lobe of the liver invaded the right kidney. This explained a hematuria that the patient had previous to admission. One of the cases was remarkable in that a large abscess in the upper part of the right lobe had entirely healed and had been replaced by a mass of dense fibrous tissue measuring about 3 cm. in diameter. This abscess had previously ruptured through the diaphragm into the lung, and the

patient died from the effects of a large abscess in the lower lobe of the right lung, in which amebæ were found. The opening in the diaphragm was found entirely closed at autopsy. Seven of the abscesses were intact at the time of the autopsy. The series shows, what all statistics have, that the rupture is most frequently through the diaphragm into the lower lobe of the right lung with the establishment of an hepato-pulmonary abscess. The relatively large number of ruptures (three) into the inferior vena cava is of extreme interest. In one case, the inferior vena cava, beginning at a point just above the rupture, contained an organized, decolorized, firm thrombus, which extended upward and projected into the right auricle, which it nearly filled. In addition to the situations above noted where rupture may take place, the abscess may open into the pericardium, the stomach, bladder, colon, or small intestine, peritoneum, or through the skin in the right hypochondrium.

Symptoms of Hepatic Abscess.—The symptoms may be insidious in their onset, or they may be ushered in fairly abruptly. Pain is one of the earliest symptoms. At first it is usually dull and aching, later becoming lancinating and tearing in character. The former is due probably to stretching of the liver, while the latter is attributable to involvement of the peritoneum or pleura. The situation of the pain varies greatly. It may be in the epigastrium, right hypochondriac, lower right axillary, or scapular region. It is quite surprising the large number of our cases that have complained of pain in the region of the right shoulder-joint. This is a reflex pain through the phrenic, which receives large twigs from the fourth cervical. The fever which develops is at first usually of a continuous type; later it becomes remittent, and still later of an intermittent, septic type. At this stage chills are common, and the symptoms may simulate malaria. Profuse sweating is the rule. The pulse ranges between 100 and 140, and there is a certain amount of dyspnea, especially with any pleural or pulmonary involvement. There may be nausea and vomiting. Emaciation may be very marked. The patients have a sallow icteroid tint, and the conjunctivæ have a yellowish hue. The French think that there is something almost pathognomonic in the facial appearance of these cases. Marked jaundice is quite rare. As shown above, there is usually a moderate leucocytosis, the average in our cases being 18,300 per c.mm.

Physical examination may show some fullness in the epigastrium or right hypochondrium. There may be tenderness over the hepatic region, and if the abscess has attained considerable size the edge of the liver will be palpable. If the abscess be situated on the lower aspect of the right lobe or in the left lobe, its presence is more likely to be suspected early then when situated elsewhere. Percussion, when the abscess is of considerable dimensions, will nearly always reveal an increase in the area of hepatic flatness. Owing to the fact that the large abscesses are most frequently situated in the upper and posterior part of the right lobe, it will usually be found that the hepatic flatness will reach much higher than normal in the axillary line, and extending as high as, or higher than, the angle of the scapula. Auscultation may reveal nothing unusual. There may be an audible peritoneal rub over the liver, or, if the inflammatory trouble has extended through the diaphragm, there may be a pleuritic friction rub.

If the extension of the abscess upward be gradual, adhesions may take place betwen the visceral and diaphragmatic pleura, and the abscess may open directly into the lung, with the establishment of a hepato-pulmonary abscess. Rupture of the hepatic abscess into the lower lobe of the right lung took place in 9 of our 27 cases of hepatic abscess, or in 33.3 per cent. The invasion of the lung is usually ushered in by an aggravating cough of a convulsive character. The signs of involvement of the right lung are indicated by an increase in the area of dulness at the right base, feeble, tubular breathing and possible increase in the tactile fremitus. In the cases where the pulmonary abscess communicate with a bronchus, the most characteristic feature is the expectoration of a reddish-brown sputum described by Budd as having an "anchovy-sauce" appearance. The peculiar color of this expectoration is very characteristic. The contents of the hepatic abscess itself are not of this character, and the peculiar color is probably due to the admixture of the hepatic pus with blood as it passes through the lung. Microscopic examination of the expectoration will, on persistent search, practically always reveal the presence of amebæ. They were present in the sputum of all our cases. It further will show abundance of disintegrated pus cells, a few liver cells, some elastic tissue from the lung, hematoidin crystals, and occasionally Charcot-Leyden crystals. If the pulmonary abscess at intervals freely evacuates itself through the bronchus, the physical signs over the affected area may be those characteristic of a pulmonary cavity. The rupture of an hepatic abscess into the lung is usually followed by a decided diminution in the size of the liver as determined by palpation and percussion.

Bacterioscopic and Bacteriologic Examination of Hepatic Abscesses.—In all the cases but one, amebæ were found in the abscess contents. The exception was a case of healed hepatic abscess. Amebæ were found, however, in the pus of a lung abscess, from the effects of which the patient died. The statement that the hepatic abscesses are usually sterile requires to be modified. Not at all infrequently bacteria, in addition to amebæ, are also present. The bacteriologic study of our series of 27 cases gave the following results: The *Staphylococcus aureus* was found in 6; the *Bacillus coli communis* in 5, usually associated with other organisms; the *Streptococcus pyogenes* in 3, and the *Micrococcus lanceolatus* and *Bacillus pyocyaneus* in 1 each.

Avenues of Infection of the Liver.—Two views are held as to how the amebæ reach the liver. One view is that they migrate through the intestinal wall and enter the peritoneal cavity. Once reaching the peritoneum, they are supposed to pass toward the liver, the tissue of which they invade. Councilman and Lafluer considered this the likely mode of infection, and thought it amply explained the occurrence of the large abscesses in the upper part of the liver near the diaphragm, as well as of the multiple smaller superficial abscesses. In support of this view, Lafleur cites a case of dysentery in which a peritonitis existed with amebæ in the exudate over the intestinal coils and over the surface of the liver. Rogers,[11] who has made a study of amebic dysentery and hepatic abscess in India, believes that this is the method of infection in a good many cases.

The most rational theory, and the one that has the largest number of supporters, is that infection of the liver occurs by way of the portal vein. There is ample evidence in favor of this view. Dr. W. G. MacCallum, of the Johns Hopkins Hospital, in a verbal communication, informs me that in a number of recent cases he has found the amebæ in considerable numbers

11. Rogers: British Medical Journal, Sept. 20, 1902.

within the portal capillaries at the margins of the intestinal ulcers. Such a method of infection, it would seem, could alone explain the innumerable small abscesses scattered throughout the entire liver in many of the cases.

2. *Amebic Empyema.*—In two cases the hepatic abscess ruptured directly into the right pleural cavity. In a third case, an amebic abscess of the lung ruptured into the right pleura, giving rise to a pyo-pneumothorax which was recognized clinically.

3. *Perforation of the Colon and Peritonitis.*—Just as in typhoid fever, the intestinal ulceration may become so deep that perforation of the colon eventually results. This occurred in three cases in our series. In one case the patient was operated on within three hours after the perforation occurred. He failed to recover, however.

4. *Intestinal Hemorrhage.*—At first thought it seems somewhat surprising that intestinal hemorrhage is not more frequent, considering the extent of the ulceration in the severest cases. It occurred in 3 cases in the series. Its infrequency is due to the fact that the vessels are thrombosed in the area of infiltration.

Other Associated Infections.—It is of considerable interest that the amebic dysentery was associated with another protozoan infection in a number of instances. Five of the patients also had malaria. Three of these were double tertian and two estivo-autumnal infections. Flexner[12] reported one of these cases and found in addition the *Bacillus coli communis* and the *Micrococcus lanceolatus* in the cultures from various organs. Another case was of extraordinary interest. The patient had suffered from dysentery for six years. On admission it was found that he was also suffering from typhoid fever, confirmed by a positive Widal reaction. The typhoid was complicated by a double thrombosis of the femoral veins. During convalescence he developed an amebic abscess of the liver for which he was operated on, with eventual recovery. One patient had pulmonary tuberculosis.

MORBID ANATOMY.

The intestinal inflammation and ulceration is confined almost exclusively to the large intestine. In 2 of our cases there was slight superficial ulceration in the last few centimeters of the small intestine.

The intestinal lesion consists of ulceration which has been preceded by infiltration of the submucosa due to an edematous condition and to multiplication of the fixed cells of the tissue. In the earliest stage these local infiltrations appear as hemispherical elevations above the general level of the mucosa. The mucous membrane over these soon becomes necrotic and is cast off, exposing the infiltrated submucous tissue as a grayish-yellow gelatinous mass, which at first forms the floor of the ulcer, but is subsequently cast off as a slough. The individual ulcers are round, oval or irregular, with infiltrated undermined edges. The visible aperture is often small compared with the loss of tissue beneath it, the ulcers undermining the mucosa, uniting and forming sinuous tracks bridged over by apparently normal mucous membrane. According to the stage at which the lesions are observed, the floor of the ulcer may be formed by the submucous, the muscular or the serous coat of the intestine. The ulceration may affect the whole or some portion only of the large intestine, particularly the cecum, the hepatic and sigmoid flexures and the rectum. In severe cases the whole of the intestine is much thickened and riddled with ulcers, with only here and there islands of intact mucous membrane. Healing takes place by the gradual formation of fibrous tissue in the floor and at the edges of the ulcers, which may eventually result in partial and irregular strictures of the bowel.

Microscopic Examination.—A notable absence of the products of purulent inflammation appears. In the infiltrated tissues polynuclear leucocytes are seldom found and never constitute purulent collections. Amebæ are found more or less abundantly in the tissues at the base of and around the ulcers, in the lymphatic spaces, and occasionally in the portal capillaries.

Two kinds of lesions occur in the liver. First there are local necroses in the parenchyma, scattered throughout the organ and possibly due to the action of chemical products of the amebæ. The abscesses, as already stated, are either multiple or single. Multiple abscesses are usually small and generally superficial. In an early stage they are grayish-yellow, with sharply defined contours, and contain a spongy necrotic material, with more or less fluid in its interstices. The larger abscesses have ragged necrotic walls, and contain a more or less viscid, greenish-yellow, or reddish-yellow purulent material mixed with blood and shreds of liver tissue. The older abscesses have fibrous walls of a dense almost cartilaginous toughness. A section of the abscess wall shows an inner necrotic zone, a middle zone in which there is a great proliferation of the connective tissue cells and compression and atrophy of the liver cells, and an outer zone of intense hyperemia. There is the same absence of purulent inflammation as in the intestine, except in those cases in which a secondary infection with pyogenic organisms has taken place. The material from the abscess cavity shows chiefly fatty and granular detritus, few cellular elements, and amebæ in variable numbers, which are also found in the abscess walls, chiefly in the inner necrotic zone. Very frequently the pus in the central part of the abscess contains no amebæ. These are found in gradually increasing numbers as the abscess wall is approached. The organisms remain at the margins of living tissue, where they can obtain oxygen, which seems essential for their existence.

DIAGNOSIS.

The diagnosis of amebic dysentery depends on the finding of actively motile amebæ in the stools. In the majority of cases the amebæ will be found in the first specimens examined. When the organisms are few in number, and particularly in the chronic cases during the periods of constipation, many examinations extending over days may be necessary before positive findings are made. It is important that the stool should be examined as soon as possible after being passed and while the feces are still warm. In order to prevent the feces from cooling off it is well to have the patient pass the stool into a warmed receptacle and then to immerse the latter in an outer basin containing warm water. Our routine method in the hospital wards, however, has been to secure perfectly fresh specimens of the intestinal contents by the introduction of the rectal tube. When the stools are fluid considerable quantities of fecal matter may be obtained, and when constipation exists small portions of mucus will be found in the lumen of the rectal tube from which preparations for microscopic examination may be made. In searching for amebæ the portions of the feces to be selected are the particles of blood-stained mucus and the small gelatinous masses consisting of necrotic intestinal mucosa. In examining the specimen microscopically, it is well to use the low

12. Flexner: Johns Hopkins Hospital Bulletin, vol. vii, 1896, p. 171.

power first. In this way the slide can be rapidly looked over and the amebæ will be recognized as larger and more refractile than the intestinal epithelial cells and leucocytes from which they have to be differentiated. Even the ameboid movement can be recognized with this power. When a suspicious looking field has been found the high power should then be used. A positive diagnosis of amebic dysentery should be made only when actively motile organisms have been found. When one finds large, round, non-motile bodies containing one or more red cells one can be reasonably certain that he is dealing with amebæ. A positive diagnosis, however, should be withheld until actively motile organisms are found, which result will almost surely follow in such cases if persistent faithful search be made. There is one type of degenerated epithelial cell which may give rise to confusion. This is an intestinal epithelial cell in which vacuolic degeneration is taking place. The vacuole gradually increases in size at the expense of the remainder of the cell and might be mistaken for the hyaline ectosarc of an ameba. It occupies usually one side and the nucleus is pushed to the other side of the cell. The absence of any ameboid movement should suffice to prevent misinterpretation of these cells. Swollen degenerated leucocytes should give no trouble. The monads are recognized by their peculiar movement and by their different morphology.

When physical signs pointing to hepatic abscess develop in a case of amebic dysentery one naturally suspects that the abscess is of amebic origin. The question of the differential diagnosis between hepatic abscess, subphrenic abscess and pleurisy with effusion will not be considered here. The positive diagnosis of hepatic abscess will depend on the finding of motile amebæ in the contents of the abscess. In a large number of our cases of hepatic abscess contents were obtained for microscopic and bacteriologic examination by means of a long aspirating needle. While some objection to this procedure might be raised, we had no untoward results in any of our cases. The point of introduction of the needle, which should be 8 to 10 centimeters long, will depend upon the suspected position of the abscess. The procedure may be repeated a number of times if the first puncture is negative. The absence of amebæ in the contents does not prove that the abscess is not of amebic origin, for it is a frequent occurrence in cases operated on not to find amebæ until the abscess evacuates itself and until particles of the abscess wall appear on the dressings. The absence or partial absence of pus cells in the contents of an hepatic abscess is always suggestive of its being amebic in origin, because the ameba is not a great pus producer. The bulk of the contents consists largely of granular debris resulting from broken down liver cells. An amebic origin should always be suspected when the cultures prove negative. Amebic abscesses of the liver are not by any means always sterile, however, as has been already amply shown in this series.

When a patient with an hepatic abscess suddenly begins to expectorate quantities of sputum possessing a reddish-brown "anchovy-sauce" appearance, the establishment of an hepato-pulmonary abscess must be considered. The granular character of the pus on microscopic examination and the finding of liver cells and hematoidin crystals confirms this suspicion. Careful and persistent examinations of the sputum will nearly always reveal the presence of amebæ when the hepato-pulmonary abscess is of amebic origin. Amebæ were found in the sputum in all our nine cases in which this complication occurred.

After the discovery of *Bacillus dysenteriæ* some investigators were at first inclined to believe that this organism was the primary agent in setting up the intestinal inflammation and that the *Amœba dysenteriæ* was a secondary invader and of minor pathologic importance. These observers now credit the ameba with full powers to produce the lesions which are characteristic of amebic dysentery. The blood serum of nearly all the cases of amebic dysentery admitted to the Johns Hopkins Hospital during the last two years has been tested in order to ascertain whether it possessed any agglutinative action with the *Bacillus dysenteriæ* obtained from various sources. The test was invariably negative, thus tending to show that *Bacillus dysenteriæ* played no part in the production of the disease in our cases.

COURSE AND PROGNOSIS.

Any one seeing numerous cases of amebic dysentery learns to be guarded in his statements to the patient concerning the ultimate outcome of the disease. Tendency to a relapse of the dysenteric symptoms is one of the striking characteristics of the affection. In the majority of cases the dysentery yields fairly readily to absolute rest and intestinal medication in a very few days, and the bowels may become constipated and move only when the medicated irrigations are administered. The recurrence of the symptoms in patients discharged from the hospital apparently cured, is no doubt due to the failure of the intestinal irrigations to reach the living amebæ buried deep in the cells of the submucosa of the intestines. These organisms that survive eventually multiply in sufficient numbers to again set up the local intestinal ulceration with a consequent relapse of the symptoms.

That the disease is a grave one is amply illustrated by the mortality in the Johns Hopkins Hospital series. Of the 119 cases, 28 or 23.5 per cent. terminated fatally. Hepatic abscess is a very serious complication. Of the 27 cases with this complication 19 died. Five recovered after being operated on. Two of the 9 cases of hepato-pulmonary abscess left the hospital very much improved with good prospects of recovery, although their ultimate fate is not known. One case of abscess refused to remain in the hospital and was not treated. The seriousness of the hepatic abscess as a complication is further emphasized by the fact that the 5 recoveries after operation were out of a total of 17 cases operated on.

TREATMENT.

Until we know something definite of the life history of the ameba outside the human body it will be difficult to prescribe any adequate prophylactic line of treatment. Presumably, however, the same precautionary measures against typhoid infection, especially in connection with drinking water, will prove serviceable in this disease.

When the disease has actually established itself, the patient should be put to bed and kept absolutely quiet until the active symptoms have been controlled. The diet should be simple and easily digestible. A long list of medicines, administered by mouth, has been tried without satisfactory results. Even ipecac, formerly so strongly recommended in the tropics for the various forms of dysentery, has fallen largely into disuse. Local treatment gives the best results. Various astringent solutions have been advocated and may be tried. Large high irrigations of a solution of quinin have given the best results and this has been the routine treatment in our wards. The success of the treatment depends largely

on the method of giving the irrigation. It must be remembered that the rectum in the majority of cases is not at all or only slightly involved and that the ulceration is most extensive in the cecal pouch and in the ascending colon. One must insure, then, the irrigation fluid reaching the upper part of the colon. This is best attained by having the patient's hips well elevated on firm pillows and to have him roll occasionally from his left to his right side. The same object may be secured by placing the patient in the knee-chest position. A liter of the quinin solution should be allowed to run into the colon twice daily. The strength of the solution at first should be 1-5000, gradually increasing it until it reaches 1-1000 or 1-500. In some cases we have given the patients at intervals an irrigation of a weak solution of hydrogen peroxid with apparent benefit. Colostomy has been recommended very highly by some in the intractable cases. It was only performed once in our series. The patient was almost moribund at the time of the operation and died shortly after.

Where the dysentery is complicated by hepatic abscess, the latter should be operated on at the earliest possible opportunity after a diagnosis has been established. Five of our 17 cases operated on recovered. While these results are fairly satisfactory they leave much to be desired. The earlier the operation the better the patient's prospects will be. The unsuccessful results after operation have, in many cases, been shown to be due to the fact that the abscesses are multiple and consequently only one abscess is evacuated, the others continuing to exert their injurious effects after operation. The operation is usually done in two stages in this hospital. The first operation is to promote shutting off the peritoneal or pleural cavities, depending on the seat of the incision. The second operation is for the evacuation of the abscess, and is performed a few days later. This delay, of course, is only permissible when the patient's condition will allow it. Rogers advocates very strongly a quinin solution of about 1 per cent. strength for irrigating out the abscess from time to time. He believes that the amebæ in the abscess wall are more quickly destroyed, thus allowing of a more rapid healing.

Where the abscess opens into the pleural cavity with the establishment of an empyema, free drainage must be established. When intestinal perforation occurs the experience with typhoid perforation in recent years leads one to hope that success might follow operation if performed very early.

SUMMARY.

In nearly fourteen years 120 cases of amebic infection have been admitted to the Johns Hopkins Hospital. Of these, 119 were cases of amebic dysentery or amebic abscess of the liver, the remaining case being one of amebic abscess of the floor of the mouth. Of the 120 cases 118 were admitted to the medical wards. During this time there were 15,817 medical admissions, the amebic dysentery cases constituting 0.74 per cent. of the cases. Of the 119 cases of dysentery, 82 were apparently contracted in Baltimore and 13 in the State of Maryland outside Baltimore, or a total of 95 cases within the borders of Maryland. The largest number of cases occurred in the third decade. The youngest patient was a child two years and eight months old, and the oldest a man of 71. A point of special interest is the comparatively large number of cases in children under 10 years. Eleven cases, or 9.4 per cent., occurred in the first decade, 6 of these belonging in the first hemi-decade. There were 108 males and 11 females. The series comprised 107 whites and 12 blacks, or a proportion of 9 to 1. The total ratio of whites to blacks in the hospital is about 7 to 1. A secondary anemia of moderate grade occurs. Occasionally there is a polycythemia. The average leucocyte count in the uncomplicated dysentery cases was 10,600. In the hepatic abscess cases it was 18,350. Hepatic abscess occurred in 27, or 22.6 per cent., of the cases. Nine of these ruptured into the right lung and 2 into the right pleura. Three opened into the inferior vena cava. In 10 cases there was a single large abscess in the upper part of the right lobe. In 8 cases there were multiple abscesses. Perforation of the colon with peritonitis occurred in 3 cases; and severe intestinal hemorrhage in 3 cases. Five cases were complicated by malaria; 1 by typhoid; 1 by pulmonary tuberculosis; and 1 by a strongyloides intestinalis infection. The agglutinative blood reaction with *Bacillus dysenteriæ* was negative in all cases tried. A marked feature of the disease is the great tendency to relapse. The mortality was high; 28, or 23.5 per cent., terminated fatally. Hepatic abscess is a serious complication, 19 of the 27 cases terminating fatally. Five were cured out of 17 operated on. Two of the hepato-pulmonary abscess cases were discharged very much improved. One abscess case did not remain to be treated. Quinin irrigations still seem to give the best results in the treatment of the dysentery.

THE TREATMENT OF ACUTE DYSENTERY.*

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The subject will be considered under three heads: 1. Regiminal Treatment; 2, Internal Remedies; 3, Topical Applications.

I. REGIMINAL TREATMENT.

The regiminal treatment, properly carried out in its various details, is potent to render the course of this affection distinctly milder and more favorable. Among the eminently important measures in bacillary dysentery I should regard rest in bed throughout the attack as deserving of a prominent place, and it should be rigidly enforced in all instances, not excepting the milder sporadic cases. As a means to conserve the bodily strength and energy, absolute repose is never uncertain in its effects; its extreme importance to the inflamed and ulcerated bowel, with a view to promoting resolution and the healing process, is universally acknowledged. The efficiency of rest in bed can be appreciably enhanced by constant, careful attention to the ventilation of the sick chamber. Fresh, pure air, without strong currents, is practically important as an aid in preventing the development of dangerous asthenia.

Too close attention to the diet and manner of feeding can not be paid. Certain dietetic principles need to be kept in view. For example, it must be recollected that concentrated, soft and liquid forms of food tend to favor constipation, whereas bulky, hard articles stimulate intestinal peristalsis.

Our aim in this disease is to minimize the intestinal contents, and thus, also, the amount of decomposable material that will reach the seat of the morbid changes. To reduce the putrefactive processes in the intestines, especially during the active period of acute bacillary

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dysentery, an absolute liquid diet composed principally of milk and albumin water, is a prime requisite. The milk should be predigested and given in small quantities, and the dejecta carefully scrutinized; and the appearance of food remnants in the feces is an indication either for further dietetic restriction or a change of pabulum. Dieting must be systematically conducted. When not objected to, the albumin water is admirably suited to this disease in the early acute stage. If carefully carried out, a milk diet, however, is attended with the least degree of intestinal putrefaction. Nothing is more pernicious in its effects upon the local lesions than to overburden the much-enfeebled digestive organs.

It is doubtless true that the fats increase intestinal putrefaction, and must be allowed in relatively small amounts in this disease, if at all. This is probably also true of carbohydrates, although Bachman's experiments, contrary to the general teaching, show that they exert no marked influence on intestinal decomposition. Nutrients are of signal importance in supporting the vital powers, and may be preventive of dangerous asthenia. Finally, not all foods, even among the blandest and most nutritious forms, are equally well borne by the stomach, and several changes may be necessary during the course of a given case.

I have dwelt somewhat at length on the subject of diet in dysentery, believing that there is a lack of appreciation on the part of the general profession of its true value in the management of this disease.

Stimulants are required in the severer forms of endemic, and more especially epidemic, dysentery, to overcome the pronounced asthenic which often develops at a comparatively early period of the disease. Marked and even alarming circulatory enfeeblement may be met, and this calls for the free use of diffusible stimulants (e. g., champagne). In extreme adynamia, strychnin should be employed subcutaneously; and the timely, judicious employment of the normal saline solution is highly serviceable in similar cases. It has seemed to me that in our eagerness to find a special method of treatment (of which there are not a few from which to make a selection), agencies and elements whose efficiency has been satisfactorily demonstrated by the experience of by-gone generations of physicians, have been omitted from consideration in discussing the management of dysentery. An examination of the literature will confirm this opinion, so far as relates to the use of stimulants in this disease at least. The regimen, during the convalescing period, should receive much attention. Indiscretion in diet must be obviated; the too early use of fats, fruits and the coarser vegetables often cause a return of the dysenteric symptoms. The habits of the patient must be vigilantly looked after until full health is restored, and an abdominal bandage of wool is advised following an attack of dysentery, and may be warmly recommended.

The prophylactic measures applicable in the treatment of dysentery are much the same as those demanded by other micro-organismal diseases, notably typhoid fever, and need not be detailed here. Especial attention, however, should be paid to the disinfection of the excreta, while the drinking water must be both filtered and boiled. Unless a rigid system of disinfection of the stools be carried out during the prevalence of an epidemic, an infected individual contributes to the common source of contamination.

2. INTERNAL REMEDIES.

It is customary to speak of special methods of treatment by medicinal agents. This is unfortunate, since it tends to lead to neglect of other most important elements of the treatment. Pre-eminent among special drugs stands ipecacuanha, and although a most valuable agent in this disease, it can not be said to possess an abortive, or even curative, action; it is not a specific for dysentery. Says Hare:[1] "So far as we know, any influence which it possesses is brought about by reason of the fact that it tends to produce a rather profuse flow of bile in such patients, and the close connection which exists between the torpidity of the liver (to use a popular phrase) and congestion of this organ, with congestion of the colon, makes its employment under these circumstances more rational than would appear at first glance." Woodhull,[2] however, claims that "ipecac is not, as commonly supposed, a depressant or an evacuant, except in a secondary sense. Its primary action is that of a stimulant more directly of the organic nerve." He believes that this drug thus contracts the intestinal capillaries. Treatment, therefore, should be prompt.

R. Kobert[3] states that the antidysenteric action is supposed to reside in a glucocid, ipecacuanhic acid. It is probable that the use of ipecac has been less enthusiastically supported by clinicians in recent times than was formerly the case, because its mode of administration has not been of such character as to insure the highest efficacy of the drug. Kieffer[4] gives the following method, which has been adopted in tropical dysentery: "Nourishment of every description is withheld for three to four hours. Then 15 to 25 drops of tincture of opium are administered and a small sinapism applied to the epigastrium. In from twenty to thirty minutes, when the effect of the opium begins, from 30 to 60 grains of ipecac are administered in powdered form stirred up in one or two ounces of water. The patient lies on his back in bed with both eyes covered with damp, cool compresses. The pillow is removed. The patient is carefully enjoined to make no movement. If mucus gathers in the mouth and throat, a nurse, on sign from patient, removes it with a cloth or towel. If all these precautions are rigorously carried out, the patient retains the dose."

It requires at least two hours for ipecac to produce its effect. If it be vomited within an hour, the dose is repeated as soon as the nausea subsides. When all signs of nausea have disappeared the feedings are to be resumed. The next day repeat the dose of ipecac, diminishing it by 5 or 10 grains, and continue in this way for three or four days, using always the same precautions against vomiting. Kieffer feels that if administered in this way, ipecac will prove of value in the dysentery of the United States. Although aware of the fact that most authors recommend the massive dose, in my hands quarter-grain doses administered every half hour have in some cases seemed to be quite as effective, and in children the smaller doses are to be preferred. Strassberger[5] lauds ipecac highly in the treatment of the acute exacerbations of amebic dysentery, using one dram of the Rio article, with a full dose of opium, twice daily. The effect was prompt and permanent, and in only one instance did a real relapse occur. Upon further investigation and observation he found that while it may be a specific in amebic dysentery, it has little or no effect on the bacillary forms.

The use of saline laxatives in the treatment of dysentery is generally adopted. The best preparation is

1. Proceedings of the Phila. Co. Med. Society, Sept., 1902, p. 51.
2. Therapeutic Gazette, April 15, 1902.
3. Ther. Monatsch., August, 1902.
4. Tropical Dysentery, Philadelphia Med. Jour., Jan. 31, 1903.
5. Münch. Med. Woch., Sept. 9, 1902.

magnesium sulphate, which produces an eliminative effect, depletes the intestinal mucosa, and at the same time inhibits undue peristalsis. It is best administered in doses of one dram, diluted, every hour until free purgation is induced. This is followed by the generous exhibition of acid. aromat. sulphuric., which is given partly for its astringent effect and partly to render the intestinal contents acid. It has been shown by Cunningham of India, with reference to amebic dysentery, that if the contents of the intestines are alkaline, the amebæ thrive and multiply, while conversely, if the intestinal matter is rendered acid, their multiplication ceases for want of a suitable medium. The combined saline and acid method of treating dysentery rests on a most rational basis. I have, however, found and elsewhere expressed the opinion that if saline purgatives are employed at a late stage of the affection, or even after the full development of a given case, they are invariably attended with baneful effects. Richmond[6] also observes: "It is of the utmost importance that cases in which the sulphate of magnesium or sulphate of sodium should come under treatment early in the attack, before much ulceration has taken place, otherwise the septic absorption continues. In some cases treated by this method at Duelfontain, little or no improvement accrued, and the "patient died in a condition of toxemia, with rapid failing pulse, delirium and profuse diarrhea, with much painful tenesmus." Opium in some form, preferably as Dover powder, is promptly effectual in meeting certain leading systematic indications, as pain irritability, restlessness and undue peristalsis. For intensely distressing tenderness, either an opium suppository or laudanum by enema exercise a beneficial effect. The preparations of bismuth are valuable, particularly in the milder sporadic cases, and in the advanced stage of the severest forms; they may be advantageously combined with Dover powder and an antiseptic substance.

Phelm,[7] who has had an extensive experience in the treatment of this disease in Africa, advises the successive use of purgatives, calomel and subnitrate of bismuth. A suspicion of dysentery calls for 30 grams of castor oil. If the case be one of dysentery, calomel is given after twelve to eighteen hours. At the end of three days, calomel is succeeded by bismuth subnitrate, which, in turn, is kept up for three or four days, or until the stools become solid again. It may be questioned whether any of the intestinal antiseptics exercise a potent influence; and it may be safely assumed that they are without the power to destroy the infecting micro-organism. The antiseptic care of the intestinal tract in bacillary dysentery, however, should be one of the aims of treatment, and guaiacol, salol and the preparations of naphthol are the agents of choice for this purpose. They may be combined either with the ipecac or salines, or with both. Richmond,[8] during an experience of the treatment of dysentery, found that none of the recognized methods were infallible, and the use of sulphur in the treatment of this complaint was suggested to him on the analogy of the treatment of anthrax by sulphur, as advocated by Mr. Arbuthnot Lane.[9] He had under his care in the Imperial Yeomanry Hospital at Pretoria, 20 acute cases and 10 cases of chronic diarrhea following attacks of acute dysentery. All the acute cases were treated with sulphur and Dover powder, and the chronic cases with sulphur alone, and in every instance a cure resulted. The ameba was carefully searched for in all of Richmond's cases, but was never found, and he believes it to be a justifiable speculation that the dysentery of South Africa was, like that of Japan and the Philippines, due to the Shiga bacillus. This observer prescribed 20 grains of sublimed sulphur combined with 5 grains of Dover powder four-hourly in the acute cases, and a like dose of sulphur alone in the chronic diarrhea resulting from acute attacks. The signal value of this remedy has been confirmed by the experience of other competent clinicians, both abroad and in this country. Although the exact mode of action of the sulphur is unknown, it is probable that the resulting sulphuretted hydrogen and sulphur acids inhibit the growth and propagation of the *Bacillus dysenteriæ*. Stengel has observed the same curative effect in amebic dysentery, and it is quite reasonable to suppose that the modus operandi of its action is similar in this form to that of bacillary dysentery. This remedy is strongly advised on theoretical grounds, and in view of the brilliant results already reported, is worthy of a more extended trial than has as yet been accorded it. It will probably be found to be best suited to protracted or chronic forms of the complaint. Dabney has pointed out the eminently important fact that the existence of certain complicating conditions, as malaria and various intestinal worms, may occasion non-success in attempts at treatment, unless recognized and met by the use of quinin or anthelmintics according to the given case. Failure of the ipecac treatment may also be due to the unreliability of its preparations.

Another method of treatment is by the use of antidysenteric serum. Gay[10] has prepared vaccines of uniform activity, and by means of which he could protect guinea-pigs from a multiple fatal dose of living dysentery bacilli, and also produce in the horse an active, immune serum. Gay thinks that a useful serum therapy of bacillary dysentery and of certain forms of the summer diarrheas in infants (the latter having recently been shown to be due to the *B. dysenteriæ*) is rendered highly promising. Shiga has successfully employed a serum which he himself has prepared. It is both protective and curative, but not as yet available for general use.

3. TREATMENT BY TOPICAL APPLICATIONS.

The treatment of dysentery by high intestinal irrigations is doubtless of value, but quite a few recent writers are not ardent advocates of the use of large enemata in acute bacillary dysentery, believing that they may cause atony and weakening of the coats. Astringent and antiseptic solutions are used for this purpose; they must be weak, otherwise the tormina and tenesmus—distressing features of the disease—will be materially increased. The method is better adopted to the more chronic forms of dysentery, the amebic variety in particular. In the latter, a warm solution of quinin (1-2,000, 50-5,000) is almost universally acknowledged to be more or less efficacious. It may be questioned, however, whether the amebic form is curable by known methods of treatment. In the milder forms of acute bacillary dysentery, copious enemata are unnecessary. If employed in this class of cases, the same precautionary measures must be taken as in the severe types of the disease.

Among the remedies thus employed are silver nitrate, strength of solution (gr. ss. to 1 ad ℥i); salicylic acid (1 to 2 per cent.); tannic acid (½ to 1 per cent.); zinc. sulpho-carbolate (gr. i-ii ad ℥i); and mercuric chlorid (1-6,000).

6. London Lancet, June 15, 1901.
7. Deutsche Medicinische Wochenschrift.
8. London Lancet.
9. The Medical Week, Dec. 8, 1891.
10. Univ. of Penna. Medical Bulletin, Nov., 1902.

It has been my custom to alternate an astringent and antiseptic solution, administering a copious clyster at twelve-hour intervals.

The mode of giving the irrigations is of vital importance. A fountain syringe should be employed, and as shown by the experiments of Hare and Martin; the pressure should never exceed two or three feet. Intestinal lavage must be a slow process in order to be successful, and to this end the flow should be interrupted at short intervals. The patient during the enemata should assume either the dorsal position or that on the left side, with the hips elevated; or if he be not too ill, he may be turned from side to side during its administration.

In conclusion, I would emphasize the fact that it is impossible to indicate a special mode of treatment that would be suitable for all cases of dysentery since each case, whether of the bacillary or amebic variety, presents certain individual peculiarities. The therapeutic measures must vary also with the particular stage of the affection and the previous condition of health of the patient.

DISCUSSION

ON PAPERS OF DRS. MASON, KNOX, BURNS, HARRIS, FUTCHER AND ANDERS.*

DR. ALEXANDER LAMBERT, New York—This is not a common disease in the North. Still, it is not uncommon among transients going through New York and who land in Bellevue Hospital. Some years ago I was surprised to find cases of amebic dysentery developing in people not 25 miles from New York; I have had four such cases in the past five or six years. It has been stated that liver abscesses were more frequent in the North than in the South. So far as a limited experience in a number of cases of amebic dysentery is concerned I have seen abscess develop in a large number.

I have found that high enemata given one week, and quinin the next week, and silver once or twice a day, have given me better results and quicker improvement than followed when I persisted in quinin or silver. In the more chronic cases I have given 1-500 bichlorid solution and run it down to 1-1000 with beneficial results. Salol and castor oil seem to give more satisfaction with some patients. Most of these cases have gone out of the hospital cured unless they died of liver abscess.

In all these cases of amebic dysentery there was one symptom that I have been unable to find mentioned in any textbook, viz., the severe amount of pain in the muscles at night; painful cramps in the muscles were found in every case of amebic dysentery. In the other cases of dysentery this was not complained of. I should like to hear from the Section on this symptom.

DR. T. S. DABNEY, New Orleans—At first I used sulphate of magnesia, but experience has taught me that sulphate of soda by reason of its action on the liver is far more efficacious. I also wish to state that the combination I use has a little morphin added, 1/6 to 1/32 of a grain to the dram; there is also dilute hydrochloric acid and peppermint water, and this combination acts well. If you take six cases of dysentery and use sulphate of soda in three, and sulphate of magnesia in the other three, you will not use sulphate of magnesia again. In conjunction I use acid drinks of dilute sulphuric acid, or nitrohydrochloric acid. All my patients drink this all the time. Experience has taught that the bacillus of dysentery seems to thrive poorly in acid and acid medium; it seems to require an alkaline medium, hence acidulated drinks inhibit the growth of this bacillus.

While in Colombia, South America, in the summer of 1892, I was asked by Dr. Angoula, a native Colombian physician, a close observer of the endemic diseases of his country, to visit the village of Rio Frio, situated in the midst of vast banana haciendas, where a disease, characterized by severe intestinal hemorrhage, was at that time prevailing. In almost every thatched hut we found patients suffering from profuse bloody discharges at frequent intervals. A moderate amount of fever, but not much tormina or tenesmus was present. So great was the loss of blood that the patients seemed exsanguinated. On being asked by the Doctor for the diagnosis and treatment, I politely declined either, and remarked I was the student and he the teacher. His diagnosis was intestinal paludic fever and his routine treatment one gram of the sulphate of quinin dissolved in water acidulated with dilute sulphuric acid, this to be repeated every four hours until the character of the stools markedly changed. On our second visit, six hours later, we found the diagnosis verified by the treatment, for never in my professional life before had I seen such immediate and happy results follow so promptly on the administration of any remedy. I am inclined to believe the acid medium played an important part in the cure.

DR. T. J. MOORE, Galveston, Texas—I believe that there is not only amebic but also bacillary dysentery where I live. During the past four years we have carefully examined every malarial fever case, and, as a result, I am not ready to admit that we have malarial dysentery. I have treated during the past four years several hundred cases of malarial fever and associated with many there has been dysentery, but on closer investigation we have found, in probably all of them, some other cause for the dysentery than the malarial infection. I would rather regard dysentery as one of the symptoms of malarial fever seen occasionally. Hemoglobinuric types of fever with dysentery seem to be more common. We must admit that there is some gastrointestinal disturbances in many cases, but I am not ready at all to admit that we have malarial dysentery. Many cases of amebic dysentery get better on quinin and some better without quinin. During the past three years, at my suggestion, in the wards of the hospital we have been using the fluid extract of chaparro, a Mexican shrub. In the series of cases in which this drug was used, some ten or twenty, there was a rapid disappearance of the dysentery, and also of the amebæ from the stools. This drug is well worthy of trial.

Dr. Lambert has referred to cramps in the muscles of the arms and legs; this is especially true in the severe and acute cases where you find a great number of these amebæ, many containing red blood cells. In the severe cases the amebæ show a disposition to collect within themselves a large number of red blood cells. In the acute form there is another feature, the acute swelling of the mucous membrane which may cause a complete occlusion of the intestines.

DR. WALTER SHROPSHIRE, Yoakum, Texas—The cause of this disease has been to me an enigma for many years. Three years ago I had a case in a child nine months old. Severe symptoms were referable to the lower rectum and the disease progressed rapidly. An examination of the feces disclosed amebæ which contained red blood cells. Irrigation of the rectum and colon with quinin caused a disappearance of the ameba. When first examined I found the colon bacillus in large quantities. I called another physician in and he agreed with me in my diagnosis. The colon bacilli persisted, and the disease continued until the child began to vomit. In the vomit were found numbers of these bacilli, but no amebæ. At the autopsy, macroscopically, there was noted the characteristic undermining ulcers of the amebic dysentery. Further up in the tract were found bright red congestion of fresh inflammation. Microscopically there were found the same bacilli throughout the intestinal tract, in the mesenteric glands, liver and spleen. We then decided that this bacillus was the cause of the disease. Specimens were sent to Dr. Smith of Galveston, and he agreed that they were the colon bacilli, but said they were harmless in the intestinal tract. I am firmly convinced, though, that they were the cause of the disease. Since then I have not been able to discriminate between the two, Shiga's and the colon bacillus, and shall appreciate an accurate method of doing so.

DR. CHARLES F. MASON, Ft. Sam Houston, Texas—A great many soldiers come to me after they have passed through

* The papers of Drs. Mason and Burns appeared in THE JOURNAL, July 25; that of Dr. Knox, July 18.

several hospitals and after they have been recommended for discharge on account of disability; now, after a little experience with the following treatment, we find that these men can be much benefited. First, an anesthetic is given and the sphincter thoroughly dilated in order that a careful examination of the mucous membrane of the rectum can be made; almost always we find a little ulceration in the rectum within five or six inches from the sphincter. These ulcers are apt to be undermined, forming little pouches in the mucous membrane in which a probe can be introduced or hooked, and in which foreign matter as it comes down the bowel may gain entrance. Such ulcerations are treated by slitting them down to the bottom and curetting them or touching them with pure carbolic acid, or both. The bowel is then washed with a normal saline solution and the patient placed in bed and kept quiet on a liquid diet and preparations of milk. Irrigation with normal saline solution are used thereafter once or twice a day. Every case with one exception has been cured and returned to duty.

DR. J. H. M. KNOX, Baltimore—The work was begun last summer at the Thomas Wilson Sanitarium with much skepticism as to the relationship of the Shiga bacillus to the diarrheal cases under treatment. The dysentery organism was isolated in case after case which seemed to be quite identical clinically with the several types of intestinal disorder in infancy which are grouped together as summer diarrhea. The claim is not made that every case of diarrhea in infancy is produced by this bacillus, but our experience at Baltimore last summer would certainly indicate that a large number at least of both the acute and chronic diarrheal disorders of infants are associated with *Bacillus dysenteriæ* (Shiga). It is to be emphasized that the isolation of this organism from the stools or intestinal tract requires some special skill and a bacteriologist well trained in other lines may easily overlook the specific bacillus, as indeed must have been repeatedly done.

It is to be hoped that during the coming summer a very large series of cases will be carefully studied in many localities that it may be determined to what extent the Shiga bacillus is responsible for the widespread infant epidemics which occur each summer. I should like to urge that all those who see these cases and have access to bacteriologic laboratories familiarize themselves with the special technic necessary in isolating the Shiga bacillus and then join in the effort to assist in the bacteriologic study of summer diarrhea. We shall be glad to send cultures from the sanitarium to any who wish to familiarize themselves with the organism.

DR. WM. BRITT BURNS, Memphis, Tenn.—I do not think we are any nearer a definite knowledge of the etiology of dysentery. I am aware that most all authorities at the present time do not agree that malaria has been a causative factor in dysentery. I am also aware that some cases of bacillary and amebic dysentery occur when in unison with the malarial parasite in the blood, but I do not find that those cases respond to treatment rapidly, and I do not believe that the ordinary bacillary and amebic dysentery would respond so readily to the treatment, as I have seen many cases do under the treatment ordinarily used in malarial disease.

DR. H. F. HARRIS, Atlanta, Ga.—I wish to call attention to the treatment of amebic dysentery with hydrogen dioxid, concerning which, I observe, nothing so far has been said. When, in 1891, I saw my first case of this disease, I used the treatment first recommended by Loesch, and since lauded by various writers, which consists in injecting quinin solutions into the large intestine of those afflicted with the malady in question. Although the patient showed absolutely no improvement, I employed the same treatment in the next nine cases that came under my observation, and not in a single instance was there any appreciable effect produced. This led me to make some investigations as to the power of sulphate of quinin to kill the *Amœba coli*, and I was much astonished to find that this substance seemed to exert but little influence on these parasites. In one instance the amebæ remained alive at the temperature of the room for more than twenty-four hours in a supersaturated solution of this substance. It was thus clear that quinin sulphate could not be relied on to produce the death of the amebæ, particularly when they are embedded in the tissues, nor can this substance destroy the numerous bacteria that lie in and around the ulcers and are doubtless largely responsible for many phases of the clinical picture in this disease. Failing to get any results from the quinin injections, I tried almost everything that has been recommended in the treatment of chronic dysentery, and never succeeded in securing results in any way satisfactory. Finally, at the suggestion of a student, I used daily injections of hydrogen dioxid, diluted with water from four to six times, with the result that there was an immediate and most striking amelioration of the symptoms in almost every instance—in every case, I believe, where the solution was brought in contact with the lesion. A remarkable result of this treatment is that blood is never seen in the stools after the first injection in instances where the medicament acts properly. The treatment is continued daily for a week, and after this the number of injections are gradually reduced in number until at the end of from four to six weeks no more are given. Especially at first the injection sometimes causes severe pain, and when this is the case it is well to administer morphin an hour before the treatment is given. It is absolutely necessary that the patient be placed on a strict milk and egg albumin diet, and that he should remain in bed for from two to four months. Occasionally patients recover when these precautions are not taken, but it is unusual. I have only seen muscular cramps in bad cases.

DR. T. B. FUTCHER, Baltimore—I do not recall that any of our patients complained of muscular cramps. This symptom may occur in the southern states, where a severer type of the disease probably prevails.

We have to modify our views considerably concerning the bacteriology of the amebic hepatic abscesses. Cultures have shown that the abscesses are sterile in a much smaller percentage of cases than was formerly believed to be the case. The more frequent organisms are the *Staphylococcus pyogenes aureus* and the *Bacillus coli communis*. The *Streptococcus pyogenes* was present in three of our cases and the *Micrococcus lanceolatus* and *Bacillus pyocyaneus* once each.

In the line of treatment quinin irrigations yielded the best results. The success of this treatment depends largely on the way the irrigations are given. The object sought for is the assurance that the quinin solution reaches the cecum and ascending colon, where the ulcerations are most extensive. The relapses are due to the failure of the drug to reach the amebæ buried in the deeper layers of the submucosa. In one case an infusion of a Mexican herb which had been sent us was tried with fairly satisfactory results.

DR. JAMES M. ANDERS, Philadelphia—It is probably advisable to reiterate the importance of the benefit to be derived from absolute rest until all of the acute symptoms have subsided, whether for a shorter or longer period. The question of diet in this disease is one to which too little attention has been paid. I believe that ipecacuanha is the best single remedy for treatment of this disease, but it is not a specific, and not all patients can take massive doses. One-fourth to one-half grain doses at short intervals will give excellent results in many cases. Saline treatment should not be employed in advanced cases, but only when the patients come under observation early; as the result of a considerable experience with this method I find that if employed in the advanced stages of dysentery it aggravates rather than benefits the condition. The sulphur treatment should especially be given a trial in those cases in which ipecacuanha fails. This agent seems to be well adapted for the subacute or chronic forms; better than to the acute, bacillary form of the disease.

Cathell on Medical Societies.—Independently of the benefits and improvements accruing to the members of medical societies individually, they give a sound and healthy tone to the entire profession, stimulate the growth of medical science, and also generate and keep alive a genuine professional and brotherly spirit that tends to minimize all that is unprofessional.—Cathell.

RECENT INVESTIGATIONS BEARING ON INFECTIOUS DISEASES OF UNKNOWN ETIOLOGY.

LUDVIG HEKTOEN, M.D.
CHICAGO.

(Concluded from p. 409.)

Bacteriologic and microscopic examination of the blood has given no constant results. Nevertheless the injection of a few drops of blood invariably causes death in two or three days. Indeed, the mere insertion of a needle into the blood suffices to carry over sufficient virus to cause death. Fatal infection by way of the stomach follows the mixing of a few drops of blood with the food, and the clearest serum is as infectious as the whole blood. By inoculating a series of animals, one from another, Centanni shows that it does not concern a toxin or enzyme, but a viable virus capable of endless reproduction. He further found that the infectious agent passes through Berkefeld and Chamberland (F) filters in virulent form. Maggiora and Valenti find that the Chamberland filter K under a pressure of 1½ atmospheres holds back the infectious agent.

Lode and Gruber made the observation, confirming it by frequent repetition, that the specific cause, whatever its nature may be, passes through Berkefeld and Chamberland filters. Successive inoculation through a series of animals convinced them also that the cause is one capable of multiplication. Hence the disease is the result of the infection. In a subsequent article Lode states that the filtrates of Chamberland (kind of cylinder not stated) and Hauser filters were not definitely infectious and that the Pukall filter gave uncertain results. Berkefeld filtrates, however, were always as virulent as the unfiltered material.

As stated, culture experiments have not been successful. Various methods have been employed, including Nocard and Roux's intra-abdominal collodion sacs (Centanni).

Spontaneous infection of eggs does not seem to occur. The feces are probably not infectious in the most acute cases, but may be so in the subacute. Maggiora and Valenti declare that the secretions of the nose and pharynx are very virulent in the diphtheroid form of the disease. The exact manner in which spontaneous infection takes place is not clear, but Centanni is inclined to exclude air, dust and insects from the list of possible modes of infection.

While many birds are susceptible to the disease, rabbits and dogs appear to be immune. Young pigeons develop a peculiar labyrinthine vertigo, the semi-circular canals showing inflammatory changes, tending to sclerosis, and designated by Centanni as semicirculitis specifica.

Centanni found that the virus resists the temperature of the incubator (37.5), but heating to 60 C. for one hour destroys the infectiousness of virulent blood. Drying also destroys the virulence, but in tubes closed by melting the ends blood may remain virulent for a long time. The usual disinfectants destroy the virus quickly.

Lode states that decomposition and the admixture of various organisms destroy the virus with marked promptness, but it may remain active for twenty to thirty-three days in the unopened bodies of dead chickens, and dried material from the liver, spleen and brain remains virulent for about four weeks. Sterile filtrates remain active for several days. He finds that heating to 80 C. for thirty minutes destroys the virulence, but that strong sunlight playing directly on the dried infectious material did not render it harmless. Successful efforts to obtain immunity have not been made as yet.

The disease that Maggiora and Valenti had occasion to study corresponded closely to the clinical and anatomical descriptions by Perroncito and Rivolta of the disease named by them exudative typhus, which name Maggiora and Valenti believe ought to be retained. They show that dilutions of the blood up to 1 to 500,000 cause death in doses of 4 c.c. injected intraperitoneally. In the case of filtrates of blood emulsions 4 c.c. of a dilution of 1 to 160 represented the smallest fatal dose. Blood and exudates removed immediately after death or during the last moments of life remained virulent for forty-five days preserved in Pasteur pipettes in the dark. The meat of diseased fowls is probably not dangerous for man, but Maggiora and Valenti assume a conservative attitude in regard to this part. The virus in the epidemic studied by Maggiora and Valenti is, therefore, similar in most respects to that studied by Centanni, but the latter proved pathogenic for ducks and pigeons (Tauben), whereas the former proved harmless for these animals.

Albert Dubois[16] has observed a similar disease quite as fatal in Belgium, the infection being introduced with chickens imported from Italy. Filtrates of emulsions of the liver passed through Chamberland bougies proved virulent in a high degree.

Maggiora and Valenti[17] describe recently an infectious disease of birds (Turdus merles) caused by a microbe that passes Berkefeld filters.

7. *Rinderpest.*—Nicolle and Adile Bey[18] show that the virus of cattle pest ("peste bovine," "Rinderpest") sometimes passes through filters that are ordinarily considered bacteria-proof and sometimes not. This disease is caused by an as yet unknown virus, unknown either because invisible or incultivable, or both, by means of our present methods. Its variable behavior in regard to filtration is explained in part by the kind of filter used. Berkefeld filters are more permeable than the Chamberland filters, and of the latter the cylinder F is more porous than cylinder B. Again, the character of the fluid containing the virus plays a part. Thus a serous fluid appears to hinder the passage of the virus (shown by Nocard and Roux to be true also in the case of peripneumonia) and dilution of such fluid appears to reduce so materially the virulence of the virus as to explain the harmlessness of resulting filtrates. For control of the results of filtration of unknown virus and their significance these authors recommend the use of hydrant water, which they say commonly contains vibrios that have the power of passing through many filters. There are certain facts that indicate that the virus of bovine pest may occur within leucocytes: The blood of infected animals is the most virulent of all fluids in their bodies, and Kolle has shown that the virus is carried down by centrifugalization of both laked and unlaked blood. In blood laked by means of distilled water the leucocytes are regarded as the only elements that escape destruction. The absence of local lesions at the site of injection is also in harmony with the idea that the virus is intraleucocytic. And if the virus is contained within leucocytes it is easy to understand why it does not pass through filters freely and regularly.

8. *Sheep Pox.*—Borrel[19] finds that the virus of clavelée, a pustular disease of sheep not unlike smallpox, and

16. Compt. rend. de Soc. de Biol., 1902, liv, 1162-1163.
17. Mem. de R. Accad. in Modena, 1902, lv.
18. Ann. de l'Inst. Pasteur, 1902, xv, 57.
19. Compt. rend. de Soc. de Biol., 1902, liv, 59 61.

characterized by lesions of the skin, passes through Berkefeld filters, the filtrate being sterile when inoculated in broth, but virulent to sheep. He found, further, that the virus passes through bougie F4 and F5 of the Chamberland filter, but not through bougie F. Borrel regards the inclusions described by Bosc within cells in the cutaneous pustules and in cellular foci in internal organs in clavelée as leucocytes, and he holds, further, that the filterability of the virus is not in accord with the protozoan theory of this eruptive disease. The fact that the virus passes through filters can not, however, be regarded as conclusive proof that the inclusions are not protozoan in character, because it is possible that spore forms may be so minute as to be filterable.

Borrel[20] further points out that water vibrios sometimes pass through filters, especially when the process of filtration is prolonged. Some of these organisms are so minute as to reach the limits of the visible. He also points out that it may take several days at the room temperature before the filtrates are rendered turbid by these water organisms, subcultures in bouillon remaining sterile. Borrel notes further that protozoön, *Micromonas mesnili,* once passed a Chamberland filter.

9. *"Mosaic Disease" of Tobacco.*—Beijerinck[21] has studied the virus of an economically important disease of the tobacco plant ("Mosaik s. Fleckenkrankheit"), marked by decolorization and necrosis of the leaves. This disease is contagious, and is caused by an interesting, filterable virus that can not be seen or cultivated in the usual way. It remains virulent for six months after heating to 70 C. According to Ivanowski,[22] diseased leaves remain infectious after conservation for several months in 95 per cent. alcohol. In discussing the question whether this virus is corpuscular or dissolved ("contagium vivum fluidum"), Beijerinck seems to conclude that it is dissolved and fluid because when infectious material is deposited on the surface of agar, diffusion of the virus evidently takes place without visible change of the agar, the part below the surface becoming infectious, but without any change in the color of the medium or its refraction of light. It is open to question whether this diffusibility of the virus can be regarded as evidence of its being fluid. A minute organism might be able to penetrate into the depths of the agar. When the virus is inserted in the ground in the vicinity of tobacco plants the disease soon makes its appearance in them.

Evidently there is room for further investigation into the nature of this virus.

10. *South African "Horse Sickness."*—Macfadyean[23] found that mixtures of virulent material from horses suffering from "horse sickness" (a disease killing the majority of the horses recently imported into certain districts of South Africa), filtered through Berkefeld and even Chamberland B filters, proved fully virulent and infectious. According to Roux, Macfadyean is the only one to report successful filtration of "invisible" virus through the Chamberland bougie B. Nocard[24] found that the dilutions of the blood remain virulent after passing through Berkefeld filters, but not after going through the Chamberland F. Macfadyean draws the conclusion that the microbe of "horse sickness" is smaller than those of peripneumonia and of foot and mouth disease, which do not pass through Chamberland B.

20. Ibid., 61-63.
21. Centralbl. f. Bakt., 1899, Abt. ii, v, 27-33.
22. Ibid., p. 250.
23. Jour. Comp. Path. and Therap., 1900, xiii.
24. Quoted by Roux, Bulletin de l'Inst. Pasteur, 1903, i, 7-12 and 49-56.

11. *Epithelioma Contagiosum.*—Marx and Stickler[25] investigated the etiology of the so-called "epithelioma contagiosum" of chickens and other fowls. They show that the disease is readily inoculable, and that the virus passes through Berkefeld filters, but not through porcelain filters (Chamberland F). The virus proved to be resistant to drying and exposure to full daylight for several weeks and to a temperature of —12 C. for five weeks. It also withstood heating to 60 C. for three hours, and to 100 C. for one hour if dried and enclosed in vacuum tubes. It may be preserved in glycerin, but 2 per cent. carbolic acid destroys its power. Immunity is produced by a single, well-marked attack. The virus of the diseases in pigeons (Taubenpocken) is translatable to chickens, but it can not be successfully transferred from chickens to pigeons. In connection with this subject reference may be made to the interesting and important work of Leo Loeb and of Herzog on transplantable malignant tumors of sarcomatous nature in white rats. In a recent article[26] Loeb describes a number of experiments on material from these tumors, and in connection with the matter now under discussion it is especially interesting to note that all of his experiments, like those of Herzog, with filtrates of suspensions from tumors passed through Berkefeld filters, gave negative results. In no case did injections of such material cause the development of tumors.

Summary of Filtration Experiments.—From the results of filtration experiments certain infectious diseases of unknown etiology may be separated into two broad groups: (*a*) those caused by filterable virus, namely, foot and mouth disease, peripneumonia, rinderpest, sheep-pox, chicken typhus, horse sickness, epithelioma contagiosum of fowls, and yellow fever; and (*b*) those caused by non-filterable virus, namely, hydrophobia (?), vaccinia and smallpox.

Of the filterable viruses only that of peripneumonia has been cultivated; the presence of the others has been evident only by the pathogenic action of the fluids used.

This enumeration shows that the application of filtration to the study of transmissible diseases combined with experiments on susceptible animals or human beings, has given the investigator most valuable information that in some cases, no doubt, has spared him many fruitless tasks. The demonstration that the causes of yellow fever, of foot and mouth disease, etc., exist in virulent form in bacteriologically sterile filtrates, so far as demonstrable at the present time, would seem to show that it does not concern elements that can be studied with much hope of success by ordinary microscopic and bacteriologic methods. Thus the claims that yellow fever, for instance, is caused by *B. icteroides* are bereft of all support.

INTERPRETATION OF FILTRATION EXPERIMENTS.

We are hardly in position to affirm that size is the only factor that determines filterability or non-filterability of a virus. Attention has been called to the variable behavior of the virus of bovine pest in the filtration experiments of Nicolle and Adile-Bey. Here the kind of filter, the thickness of the wall, and the character of the fluid were found to play an important part. It was pointed out, too, that an intraleucocytic position of the virus would explain the failure to pass through some filters. Then, again, of late have been described visible bacteria that pass through filters such as the Berkefeld and Chamberland, filters originally regarded as im-

25. Deut. Med. Wochenschr., 1902, xxviii, 892-895.
26. Virchow's Archiv, 1903, clxxii, 345-368.

pervious to visible bacteria. Whether this permeability depends on special peculiarities of the organisms in question, such as mobility, elasticity and compressibility, or on special peculiarities of the filters used, has not been determined. In connection with certain experiments in filtering fluids rich in saprophytic organisms, von Esmarch encountered a minute spirillum (*Spirillum parvum*) that readily passes through Berkefeld, Pukall and Reichel filters, as well as Chamberland cylinders (F. controllée). This avirulent organism measures 1 to 3 mikrons in length, and from 0.1 to 0.3 mikron in breadth, closely approaching *B. influenzæ* in size. It is actively motile. I have already referred to the fact that Borrel also met with water vibrios that readily passed certain filters.

William B. Wherry[27] corroborates the findings of Theobald Smith in 1899 that a small, active bacillus causing pneumonia in guinea-pigs passes through Berkefeld filter No. 5. This bacillus is 0.5 mikron wide and about 0.7 mikron long. It did not pass through the larger Berkefeld No. 8, nor Chamberland bougie F. Both this organism and *B. coli communis* grow through filters quite rapidly. Hence a virus passing through Berkefeld filter No. 5 is not necessarily ultramicroscopic.*

The influence of consistence and adaptability on the part of cells subjected to filtration is shown well in the following observation by Bunge (Physiological Chemistry): "The large blood corpuscles of amphibia may be collected in the filter (that is ordinary filter paper), but not those of mammals. This is not due to their minuteness, for they are far larger under the microscope than, for instance, the crystals of a precipitate of sulphate of barium or oxalate of lime, which do not go through the filter. The red corpuscles pass through the filter because, owing to their soft and yielding consistency, they adapt themselves to the form of filter pores." It would be quite reasonable to infer that invisible organisms passing filters are endowed with motility.

Lode and Gruber advanced the idea that bacteria and similar bodies are held back by porcelain and infusorial filters by virtue of force of attraction, rather than on account of the smallness of the pores, whose diameter they claim generally exceeds the size of ordinary bacteria. They further suggest that the invisible bodies that pass through in the case of the various filterable viruses exist as semi-fluid masses, rather than as corpuscular elements like bacteria, and they even go on to intimate that such viruses may be in solution—Beijerinck's "contagium vivum fluidum"—acting after the manner of enzymes, yet capable of reproduction, but only to abandon the idea again because of the absence of demonstrable analogies. It seems to me that the fact that practically all known filterable viruses pass through the Berkefeld filters, whereas many are held back by candles of the Chamberland system, speaks against their theory of surface attraction because Berkefeld filters, being composed of infusorial earth, contain especially extensive surfaces. And then, why should the force of attraction be suspended in the case of the different materials employed in the filtration of these unknown viruses? After all, the size of the pores, being now smaller and again larger than known bacteria, and not at all of uniform diameter, and the physical character of the elements subjected to filtration would seem, for the present at least, to offer more generally applicable explanations of the results of filtration experiments.

And as it is not justifiable to assume that cellular life necessarily ceases at the limits of visibility, it does not seem to me that these experiments with filterable viruses must needs lead to the establishment of new and strange theories of the nature of the contagious elements. There is a relatively far jump between the size of the smallest visible objects and the estimated size of molecules, which again vary greatly in respect to size, and within the ultramicroscopic limits thus defined there may exist a true "mundus invisibilis," some of the inhabitants of which, endowed with metabolic and reproductive faculties, certainly may be the causes of transmissible diseases.

On the other hand, the non-filterability of certain unknown viruses—hydrophobia, variola, vaccinia—may be in itself alone insufficient reason for regarding the particular organisms in question as large enough to be visible. Attention has been given to the possibility that in the case of rinderpest the unseen virus at times may be non-filterable because surrounded by cellular protoplasm. In the case of variola and vaccinia Park's experiments with crushed material indicate, however, that other reasons must be sought for their non-filterability than intracellular position. The facts that Pukall filters hold back or destroy certain complements in serum (Ehrlich and Morgenroth and others), and that many serums with difficulty are filterable when undiluted, indicate that in filtration factors are at work that we now understand but poorly. The filtration of colloidal solutions merits further study, and the entire technic of mineral filtration should be exhaustively investigated.

ULTRAMICROSCOPIC SAPROPHYTIC ORGANISMS.

The probable existence of ultramicroscopic infectious agents has turned the attention to the question whether ultramicroscopic saprophytic forms might not exist also. As pointed out by Lode and Gruber and by von Esmarch,[28] it is rather remarkable that such forms have not been encountered as yet in view of the large amount of work done with various forms of bacterium-proof filters. Von Esmarch's experiments in this line consisted in the filtration of various mixtures, rich in bacteria of all kinds, like ditch water, vegetable infusions, decomposing urine, sputum, parts of cadavers, fecal matter, etc. The clear filtrates thus obtained were used for culture experiments on a large assortment of nutritive solutions kept under aërobic, as well as anaërobic conditions. But his efforts in this way to demonstrate the presence of ultramicroscopic forms all failed. All his mixtures, even after months of observation, remained either clear, or if turbidity or sediments formed, subcultures yielded no indication that this was due to living organisms capable of proliferation. This apparent failure he would attribute to our ignorance of the conditions essential for the life and multiplication of ultramicroscopic or invisible organisms, the actual existence of which he would not deny on the strength of these experiments. In this connection it is interesting to note that virulent filtrates of infectious materials derived from diseases just considered (except peripneumonia) have not shown any macroscopic or microscopic sign of the presence of living organisms so far as that is determinable by present methods. In our laboratory at Rush Medical College Dr. Friedman repeated some of

27. Jour. Med. Research, 1902, viii, 322-328.

* It follows that filtration experiments must be controlled most carefully. Löffler and Frosch used as control *B. florescens;* Nicolle the vibrio of chicken cholera, and Borrel certain water vibrios. Further, that in view of the fact that bacteria may "grow through" filters, all filtration of unknown virus must be rapid.

28. Centralbl. f. Bakt., 1902, xxxii, 561-569.

the experiments made by Esmarch, obtaining only negative results. Whether virulent filtrates contain particles of ultramicroscopic size whose presence may be rendered evident by means of physical methods, such as that described by Siedentopf and Zsigmondy,[29] has not been determined as yet. By this method an intense oblique illumination falls on a small field under certain conditions so that ultramicroscopic particles refract light enough into the objective to produce images, or rather luminous points. The authors succeeded in this way to render visible minute particles of gold incorporated in glass that with the highest magnification of a Zeiss microscope appeared perfectly homogeneous when illuminated in the ordinary way. Mouton[30] has suggested the use of the apparatus in bacteriology. (The use of the method in studying pathogenic agents too small to be seen is spoken of also in an editorial in THE JOURNAL, July 11, 1903, p. 104.)

CONCLUSIONS.

1. Clinical and experimental observations furnish strong evidence, and in some cases absolute proof, that certain transmissible human and animal diseases of unknown etiology are not toxic, but infectious, that is, caused by living organisms, capable of proliferation and metabolic activities.

2. In the case of the human diseases of this group, knowledge is farthest advanced in regard to those that are communicable to animals—hydrophobia, vaccinia and smallpox—and experiments on human beings have shown that the cause of yellow fever occurs in the blood, passes through Berkefeld filters, the filtrate being bacteriologically sterile, according to present methods, and that infection occurs through the medium of mosquitoes (*Stegomyia fasciata*). The etiology of the other strictly human diseases—syphilis, measles, scarlet fever, chicken-pox, typhus fever—remains unknown.

3. Certain morphologic elements in the lesions of vaccinia and smallpox are regarded by some investigators of the highest standing as representing stages in the developmental cycles of protozoa. The causative agents of these diseases do not pass through bacteria-proof filters.

4. The virus of many transmissible animal diseases (foot and mouth disease, peripneumonia, rinderpest, sheep-pox, chicken typhus, horse sickness, epithelioma contagiosum of fowls) passes through various filters ordinarily regarded as impermeable to the smallest known bacteria, the filtrates being virulent, though giving no sign of containing visible corpuscular elements.

5. Whether these invisible, and except in peripneumonia, uncultivable viruses are all ultramicroscopic in size, or invisible also for other reasons has not been settled definitely, but there is much in favor of the view that they are ultramicroscopic in size.

6. Further progress in this field may be expected from the application of methods recently introduced by physicists in order to furnish ocular demonstration of the existence of particles too small to be seen directly.

29. Annalen der Physik, 1903, x, 1.
30. Bull. de l'Inst. Pasteur, 1903, i, 27.

Elevation of the Larynx for Relief of Neuralgia.—Naegeli announces that he has frequently caused almost immediate cessation of cephalalgia and facial neuralgia, as well as forms of long-continued odontalgia, by simply elevating the larynx, holding it well upward for sixty or seventy seconds. This frequently requires to be repeated several times, but quite as frequently one single attempt will prove successful.—*Med. Times.*

TRIGEMINAL NEURALGIA TREATED BY INTRANEURAL INJECTIONS OF OSMIC ACID.

JOHN B. MURPHY, A.M., M.D.
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June 8, 1903, Mr. A. L. C., age 76 years, retired farmer, presented himself to me for treatment of a long-standing facial neuralgia. He gave the following history:

For thirteen years has suffered from neuralgic pains in right side of face, but they were not very severe or constant until four years ago. At that time he had a severe attack, which he thought was caused by a diseased upper cuspid tooth on right side. The tooth was removed about two months after the onset, and for the six weeks following he was relieved. Pain then recurred and was severe and persistent. Two years ago he had an operation performed on the right superior maxilla, the exact nature of which he does not know. He was free from pain for four months after the operation, but at the end of that time it returned, and has been present, at intervals, ever since. The pain is of severe shooting character, beginning at right ala nasi and radiating toward cheek. He also has some pain in the forehead, just above the right eyebrow, the pain radiating toward temple. General health has been fair for a man of his years.

Previous History.—"Ague," "bilious fever," etc., years ago. Used to smoke and drink moderately. Family history is negative.

Examination shows an old man of rather poor nourishment; lungs negative; heart negative; arteries sclerotic. Urinary examination negative. Slight tenderness over supraorbital and infraorbital divisions of fifth nerve at their foramina of exit. No areas of hyperesthesia or anesthesia and no evidences of tumor or inflammatory processes along the course of either nerve.

In considering the proper treatment to employ in this case, I was at first somewhat undecided. The superficial divisions, excisions or evulsions of the affected nerves at their foramina of exit would give the patient only very temporary relief, lasting, in all probability, only a few weeks or months. The excision of the nerve trunks external to the cranial foramina would have been a formidable operation, considering the poor physical condition of the patient, and would, I think, have given little better ultimate results. The recurrence would have been longer delayed, but just as certain as after the superficial operations. The intracranial division of the superior and inferior maxillary divisions with gutta-percha intervention to prevent re-establishment of nerve trunks (Abbe) was not applicable here, as it was the ophthalmic division that was most affected. The same objection would hold good with reference to Mayo's method of periosteal denudation of the bony margins of the foramina to secure bony occlusion of canal. Excision of the gasserian ganglion or resection of the sensory root within the cranium, was clearly contraindicated on account of the patient's age, the sclerotic condition of the arteries and his poor state of nutrition. An operation which is attended by a mortality of from 10 to 20 per cent. in robust patients is not to be thought of in a man 76 years of age, whose resistance is at a minimum.

Something, however, had to be done, so I decided to try the intraneural injection of osmic acid solution, as recommended by Mr. W. H. Bennett in the London *Lancet,* Nov. 4, 1899. In his paper, Bennett reports ten cases treated by this method, with most gratifying results in all. Eight of these cases were typical spasmodic tic, in one of which Meckel's ganglion had been previously removed and the inferior division resected at the base. In spite of these operations, the pain re-

curred in the buccinator muscle and was intolerable. Of the other two cases, one was a painful amputation-stump and the other a neuroma of the median nerve just above the wrist, following a division of the nerve by a piece of glass eight years previous. Without going into the reports of these cases minutely, suffice it to say that the results were all that could be desired and permanent up to the time the article was written.

The technic of the operation, as given by Bennett, and which I followed, is: The nerve is exposed through a small incision about a half-inch in length, directly over its foramen of exit, the line of incision being horizontal and parallel with the eyebrow, in the case of the supra-orbital branch, and with the normal creases of the face in the infraorbital and mental branches. The nerve is elevated by means of a blunt hook, and from five to ten minims of a fresh 1.5 per cent. solution of osmic acid injected directly into its substance. An ordinary hypodermic syringe and fine needle are used, and the solution injected in several different places, to be sure that every fiber is reached. After this is accomplished, a small amount of the solution is injected between the nerve and its sheath in the bony canal. During the procedure, a small pledget of cotton is held around the needle to absorb the excess of solution which regurgitates and to protect the skin. Wherever the solution comes in contact with the blood or soft tissues in the wound, an immediate blackening results, due to the formation of the hydroxid of osmium. The local action of the osmic acid on the terminal nerve filaments exposed in the wound is probably beneficial, so a small amount of it should be allowed to come in contact with them. After the injection is completed, the incision is closed with horse-hair or catgut suture; primary union follows, and healing is not interfered with by the action of the acid on the tissues.

My case was operated on June 11, 1903, under ether anesthesia. Local anesthesia should be used for this operation in the majority of cases. Bennett's technic was followed to the letter, and all three nerves, supraorbital, infraorbital and mental, injected. The operation lasted only about twenty-five minutes, and the patient came out of the anesthetic in excellent condition; pulse 66, temperature 99.6 F. He was put immediately in a semi-sitting position, as practically all of our patients are after operation, and the administration of fluids commenced as soon as he was awake.

In the afternoon his temperature was 99.8 F., and pulse 64. His pain had entirely disappeared. June 12, p. m., temperature 100, pulse 70; June 13, p. m., temperature 99.8, pulse 62; June 14, temperature and pulse normal; sat up in chair. After this temperature remained normal, he was up and around every day, and the sutures were removed June 17. Wounds healed by primary union. Patient discharged from hospital, with pain entirely gone, June 20. In a late report received from this patient July 21, he states that there has been no recurrence of the pain and that he feels perfectly well.

The modus operandi of this procedure is at the present time not definitely understood. The acid probably acts in one of two ways, or possibly in both: first, by producing a degeneration of the nerve on the proximal side of the injection, toward the ganglion; or, second, by causing a local destruction of the nerve and its terminal filaments. The former seems to me the more likely explanation of the two, first, because the pain does not usually subside completely immediately after the operation, as it does when the peripheral nerves are divided or resected, and as it would if the osmic acid produced only a local destructive effect. Instead, it subsides slowly and gradually, the patient, as a rule, not being entirely free from it for a week or ten days following operation. Second, the relief from pain is permanent, which is not the case after peripheral resection. In one of Bennett's cases there was a recurrence of the neuralgia, but not in the areas supplied by the nerves which he had previously injected. It was located in an entirely different area and yielded promptly to another injection of osmic acid.

Bennett, in his paper, does not describe the changes which take place in the nerves after injection, nor does he give his views as to the modus operandi of the treatment. I am now conducting a number of experiments on dogs, which, when completed, I hope, will throw some light on the subject.

The physician's post-graduate education comes from patients, from books and journals and from societies, which should be supplemented every five or six years by a return to a post-graduate school to get rid of an almost inevitable slovenliness in methods of work.—Osler.

The Obstetrician's Fee.—So long as the practitioner is so poorly paid for the valuable services he renders a woman at the time of her confinement, the woman will be neglected, and much that could be prevented will constantly happen. The average fee for obstetrical service in small towns and villages is $10, this service including attendance at the confinement and one visit during the puerperium. An extra charge is sometimes made for the application of forceps when urgently needed. The patient is not seen during her pregnancy, and in majority of cases not reporting for treatment or counsel until the call is made to the labor. The laborer is truly worthy of his hire, and if ever responsible service was rendered, it is during pregnancy, confinement and puerperium. The average workingman, on wages of $6 a week, can easily afford to lay aside $3 a month during his wife's pregnancy for the payment of the physician. When service is rendered, $25 is a very small fee for the work that *should* be done for a woman during her pregnancy, confinement and puerperium. The responsibility incurred, the care of two lives, etc., are as great as those of the surgeon in a celiotomy, and the fees should be commensurate. The profession is at fault, and with some unanimity of action the fees for obstetrical service could and should be raised.—*Louisville Monthly Journal of Medicine and Surgery.*

Eye Symptoms in Tabes.—During four and one-half years in Uhthoff's ophthalmologic clinic at Breslau, Mann found 165 cases of certain tabes and 200 with one or more suspicious symptoms. In the 165 certain cases the pupil reflex was normal in only one instance. Its absence, therefore, is a more frequent symptom in tabes than even the absence of the knee jerk. About 78.8 per cent. were in the early stages of the affection. Tabes was evident in 67.6 per cent. of the 136 cases during the same period in which the pupil reflex was absent, and general paralysis in an additional 8.8 per cent., while syphilis, with or without cerebral symptoms, was unmistakable in 8.1 per cent. The value of the ocular symptoms in tabes is that they may be evident long before any other manifestations appear. Syphilitic antecedents enhance the probability, but even without these the probabilities are three-fourths in favor of tabes. The pupils were unequal in one patient, an old syphilitic, who complained of slight disturbances in micturition, the legs a trifle anesthetic, the light reflex normal. A year later not a trace of any of these symptoms could be detected, and the man was apparently well, but when examined again, four years afterward, unmistakable signs of tabes had developed, showing that the unequal pupils five years before had been the initial symptom of the affection. Atrophy of the optic nerve was noted in 33.3 per cent. of the 165 patients, and in 27.2 per cent. of these there was ataxia. Mann's article is published in the *Allg. Med. Ct.-Ztg.*, lxxi, p. 635.

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KUSSMAUL'S AUTOBIOGRAPHY.

In 1899 appeared *"Jugenderinnerungen eines Alten arztes,"* in which the distinguished clinician, Professor Kussmaul, delighted his students and friends the world over with pictures of his early days in Heidelberg and of his *Wanderjahre* in other university towns. As an autobiography the work in many respects was unique. The style was charming and the sketches of his old teachers and of the stirring days of '48 proved so entertaining to the profession and the public that five editions were called for within four years. The volume ended with the story of his life as a country doctor in the Black Forest; then a desperate illness (acute paraplegia), gradual recovery, return to Heidelberg—and what seemed to the young doctor with a wife and two children a hopeles tragedy proved to be only the starting point in a career of singular brightness. One thing gave to the work an unusual attractiveness, it ended where biographies, particularly autobiographies, often begin—we saw only the struggles, trials and difficulties of the early years, there was no word of the distinguished teacher or much-sought-after consultant. Every reader felt that he would like another installment of such charming reminiscences.

Kussmaul died May 28, 1902, in his 80th year, suddenly, as he had hoped. Professor Czerny, the distinguished surgeon, has edited *"Aus meiner Docentenzeit"* in Heidelberg, in which he gives an account of his life as a young teacher. Before beginning work he went to Wurzburg to study pathology with Virchow and to take anatomic and chemic courses. A couple of months were spent at the asylum of Illenau, where he became interested in epilepsy, a subject on which he made his well-known researches in 1857, and on which, as we learn from the preface, he was preparing a monograph at the time of his death. An assistant physician was Gudden, who afterward become so well known; of his tragic death while in charge of the King of Bavaria, Kussmaul gives an interesting account. There seems to have been some difficulty in getting permission to teach at Heidelberg, and a most amusing description is given of his habilitation thesis, which pleased neither the faculty nor the authorities. He began to lecture on therapeutics in the winter of 1856-1857, and later on toxicology, psychiatry and legal medicine. Young teachers may read with profit what he says about the difficulties experienced in becoming facile of speech, and of the difference between *Zungenfertigheit,* which is congenital, and *Redefertigheit,* which is acquired. It took much trouble, time and practice before he became a fluent speaker, adopting finally the plan of a skeleton of headings from which the lecture was carefully elaborated beforehand. He quotes from an old friend two golden rules—to give your audience at appropriate places a brief rest, and to hold the hearers with your eyes.

Some of his early work is described, the studies in rigor mortis and his important contribution to the structural anomalies of the uterus. Perhaps the most interesting chapters are those describing the old and young naturalists and physicians of the university, and the social life in Heidelberg; of Kirchhoff, Bunsen and Helmholtz, a group of inspiring teachers hard to match in the early fifties, and of others less celebrated there are delightful reminiscences and anecdotes. One of the little touches from the hand of a master is the story of Johanna Kapp, the disturber of hearts of his student days. The concluding chapter gives an interesting account of the organization of the Association of German Naturalists and Physicians, and of the meetings at Bonn and Karlsruhe.

We regret that we do not see in Professor Czerny's introduction any notice of a continuation of this autobiography. In Erlangen, in Frieberg and in Strassburg Kussmaul took an important part in the development of scientific medicine and he reached a position of the very first rank among the physicians of Europe. But he was more than this—the qualities of heart and head were equal; he was a good as well as a great man.

THE CARNEGIE INSTITUTION AND MEDICAL RESEARCH.

Since the establishment of the above institution by Mr. Carnegie, speculation has been rife among medical men as to what provision, if any, would be made for investigation in the field of medicine. In a recent address, the president of the Carnegie Institution, Mr. Daniel C. Gilman, made very clear the policy to be pursued by the board of directors in this matter. After paying a tribute to the scientific workers who have so notably enriched medical knowledge in the recent past and expressing the conviction that medicine is at the present moment on the threshold of discoveries of the highest importance, Mr. Gilman stated that it was the purpose of the Carnegie Institution to confine its medical work to the study of the normal, and to leave the inquiry into the abnormal to the Rockefeller Institute for Medical Research.

As an example of the kind of problems the Carnegie Institution will attempt to solve, the speaker referred to the subject of nutrition, emphasized the desirability of an extension of our knowledge in that field, hinted that it was one in which very profitable work could now be undertaken and gave the impression that investigators of merit attempting to deal with problems bearing on it would receive liberal support from the board. A begin-

ning has already been made. The services of Dr. Gangee have been secured. This well-known physiologic chemist, having agreed to spend some time in preparing for the board a report in which he will offer an opinion as to the present status of the problems connected with nutrition, and point out the paths along which, in his judgment, research should proceed to yield the most important results in the immediate future.

Nothing was said by Mr. Gilman in the address referred to regarding problems in human anatomy, but there can be little doubt if research in physiology is to be subsidized, that the study of anatomic problems will also be supported. Besides, the liberality of the Carnegie Institution, with regard to the Marine Biologic Laboratory at Wood's Hole, is sufficient proof of the interest of the board in the problems of general morphology. We can be sure, therefore, that the great significance of the unsolved questions in human morphology will not be overlooked. Anatomists tell us that nowhere perhaps could money be better expended than in illuminating some of the obscure regions in human histology, embryology and neurology.

The relegation of the whole domain of pathology to the Rockefeller Institute throws a great responsibility on the latter institution. It is a responsibility, however, which the founder of the institute and its board of directors seems willing, as far as in them lies, to assume. Hitherto the medical profession has had to depend in large part on its own unaided and unendowed efforts when it wished to advance medical knowledge. It is a matter for congratulation that the industry and self-sacrifice of the profession are to be supplemented from now on by the activities of two great research foundations, one directing its attention to the phenomena of the normal human body, the other to the phenomena presented by the human body in disease.

EDISON AND *X*-RAY INJURIES.

At this somewhat late day, Mr. Edison and, through him, the newspapers have all of a sudden discovered that *x*-rays can cause injuries, and, like many other belated discoveries, the topic is now one of lively interest in the daily press. According to the various newspaper reports, Mr. Edison's injuries are interesting. His left eye is out of focus, his digestion is upset and lumps have formed all through the region of his stomach. He knows it is the result of the *x*-rays, because he held the tube close to his stomach when he was working with *x*-rays five or six years ago. The disease from which he is suffering is of a most mysterious character, and no doctor is able to tell him anything about it; and he ought to have been able to find out, for among the many specialists he has consulted there is one man who has dissected more than four thousand bodies, and if a man who has made four thousand dissections can not tell you what is the cause of lumps in your stomach, who can?

The injuries to Mr. Edison's assistants are of a much more tangible character. Without any doubt they have had *x*-ray burns, but there is nothing to indicate that the burns are not of the ordinary character of other *x*-ray burns. It is probable that his assistant, whose arm had to be amputated, is one of the cases which have been recently mentioned in the literature of epithelioma developing in an *x*-ray dermatitis of long standing. From the character of chronic *x*-ray burns the possibility of epitheliomata developing in such injuries has been pointed out by Pusey, and cases of this sort have been reported by Allen and White, and others.

If we are to believe the newspapers, Mr. Edison does not stop at recounting his strange experience, but readily offers an explanation for it, namely, that the condition is due to the action of the rays on the phagocytes; that the rays paralyze the active phagocytes without actually destroying them—all of which is somewhat bewildering. In view of the careful studies of *x*-ray injuries that have been made by Scholtz, Grouven, Gassmann, Pusey and others, which show very definitely the changes that occur in tissues under the influence of *x*-rays, it would seem that his histologic discoveries are not of serious interest. He has, as far as can be judged by the newspaper reports, found nothing that has not been found before, and offered no explanation that is of any value. He is rehashing in the daily press facts that had been learned by physicians through sad experience seven years ago. The whole thing seems to be a good deal like the promised storage batteries, a useful vehicle for publicity when propelled by the power of a widely known name.

PRACTICAL VALUE OF BACTERIOLOGIC EXAMINATION OF THE BLOOD.

That the bacteriologic examination of the blood in cases of infectious disease has been of scientific value and has modified our conception of many of these diseases is well known. That this method of examination is also of practical clinical value is clearly set forth in an article by Hektoen,[1] in which the results of his own work and those of others are considered from the point of view of their practical application in medicine.

The technic is simply that of obtaining with scrupulous asepsis a few cubic centimeters of blood and immediately inoculating media, e. g., bouillon, with the same, placing in the incubator and identifying by ordinary bacteriologic methods the organisms that may appear. A glass syringe is used, and a vein at the elbow commonly selected. The operation is almost painless. Ordinary bacteriologic training is a prerequisite to the successful application of this method and fairly complete laboratory facilities are essential, but no unusual skill is required.

The results already obtained are seen in the septicemias. Etiologic diagnosis is now possible. This is an absolute essential before specific serum therapy can be

1. Hektoen: The Practical and Scientific Value of Bacteriologic Examination of the Blood During Life. Illinois Medical Journal, July, 1903.

applied. And only by a careful study of many cases with bacteriologic examination of the blood to control the diagnosis can clear clinical pictures of blood infections be obtained. Already something has been accomplished in this line, largely through the bacteriologic study of the blood, as may be seen from reading the recent monograph by Lenhartz.[2] Our views as to prognosis in the septicemias must be somewhat modified. As shown by others and as Hektoen has found in his own work in scarlet fever, the presence of streptococci in the blood does not necessarily mean death.

The results in pneumonia are of value as the pneumococcus may be found in probably all cases. The work of Rosenow with the pneumococcus has been recently noticed in these columns. But of much greater value from the diagnostic point of view is the ability by bacteriologic examination of the blood to recognize typhoid fever before the spots, splenic enlargement, peculiar temperature, curve or agglutination reaction are present. No early physical signs, as in pneumonia, enable typhoid to be recognized before several days of fever have elapsed. By this means, however, it is recognized, and with certainty, often as early as the third day of the fever. And the only positive means of differentiating between the paratyphoid and true typhoid is offered in blood examination.

Physicians too often get the impression that research is wholly and purely of theoretical value. While there can be no higher class of investigation than that carried on for the sole purpose of discovering scientific truth, it is well for us to have the fact called to our attention as in this paper, that from all the enormous mass of laboratory research there is sure to result sooner or later knowledge that can be placed before the physician with the assurance that it is a help in his efforts to recognize and cure disease.

OZONE AND WATER PURIFICATION.

It has long been known that ozone is a highly effective germicide, but the great cost of production and other difficulties have proved for many years a barrier to its use on any large scale. Within the last four years new and interesting experiments on the purification of water by impregnation with air containing a high per cent. of ozone have been conducted in various parts of Germany. These have been carried out with a form of apparatus designed by the famous manufacturing firm of Siemens and Halske. The experiments have been followed bacteriologically by Ohlmüller and Prall,[1] by Schüder and Proskauer,[2] and others. The results have shown that the germs of Asiatic cholera, of typhoid fever and of dysentery can be surely destroyed in the ozone generating appliances under ordinary practical conditions of operation. Small ozone plants have been installed in connection with the water-works at Paderborn and at Schierstein, near Wiesbaden, and are said by Proskauer and Schüder to yield a water very low in bacteria, the number in the raw water being sometimes reduced from 20,000-30,000 to only 8-10. The ozone is generated by electricity, and the amount introduced into the water is so adjusted on the basis of carefully controlled experiments as to afford a maximum of operative efficiency at a minimum of ozone content. The results as stated certainly seem to indicate that for dealing with certain waters and with small town supplies the method is worthy of further investigation.

The item of expense, however, even at its present relatively low figure, is still far from reassuring. According to the published statements,[3] the cost of water purification by the ozone process has not been reduced below about $18 per million gallons, whereas the total cost of sand filtration, a tried and efficient method of water purification, is estimated, including interest and depreciation, at from $7 to $9 per million gallons. It is evident that some experimentation under American conditions will be needed before the treatment of water supplies by ozone can be indiscriminately advocated as applicable to the larger public supplies of this country.

MEDICAL CONTINGENT FEES.

In a damage case recently tried in a Colorado court it was brought out in the testimony that the attending physicians testifying for the plaintiff had a contract to accept as their fee a certain percentage of the award in case the suit was successful. The attorneys for the defendant corporation, naturally, made the most of this admission, holding that it was an agreement contrary to good policy and morals, while the physicians, on the other hand, claimed that the transaction was an innocent one; that, as the injured person was poor, she was allowed to contract to pay her bill in this way. There is something to be said on this side, and it does not necessarily follow that the chance of a contingent fee should influence the testimony as to the fact of the physicians. Indeed, we believe it would not, but the whole business has a dubious appearance, and the average layman is apt to put on it the very worst construction. The physician who makes such a contract is put before the public as a promoter of litigation, a sort of medical champertor, by the opposing parties if it comes before the jury, and must suffer all the prejudice that can be thus aroused. While contingent fees are undoubtedly common enough with the legal profession, they certainly are not in the medical, and it would be more in accord with the spirit of the principles of medical ethics to take the chances of losing a fee rather than those of subjecting oneself to the possible interpretations of the other course. There are occasions when one may be too business-like, and this is one of them.

MEDICAL JURIES.

It has been suggested that in criminal cases in which questions of mental sanity or other medical questions

2. Lenhartz: Die Septischen Erkrankungen, Nothnagel's System, Bd. iii, Theil 1, 1903.

1. Arbeiten aus dem kaiserl. Gesundheitsamte, 1902, vol. xviii, p. 417.

2. Zeitschr. f. Hyg., 1902, vol. xli, p. 227, and 1903, vol. xlii, p. 293.

3. Ibid., vol. xlii, p. 307.

are involved there should be a jury of physicians. Thus can be avoided, it is to be inferred, the scandal of conflicting "expert" testimony (so-called), which is so often used, it is claimed, to befog the jury and embarrass justice. It is assumed that a medical jury would be able to properly interpret the evidence and reach a correct conclusion where an ordinary jury of laymen would fail. This seems plausible, but will hardly bear examination. The plan would fail for the same reason that our present much-criticised usage of expert testimony fails; because it is based on the presumption that every physician is necessarily an expert in every branch of his profession. It is discrediting no one to affirm that an eminent surgeon may be almost as incompetent as a layman in questions of psychiatry, and vice versa, though there may be many individual exceptions to the rule. Medicine is a broad subject, and one who contracts to cover the whole field as an expert will find that he has undertaken to master a pretty considerable fragment of omniscience. Yet there are many who thoughtlessly, we believe, will offer opinions or testimony on subjects that they can not have adequately considered or studied and in which they have had no special experience. This, far more than any intentional dishonesty, has brought expert testimony into disrepute. The assumption that an average panel of medical jurymen would insure a correct verdict in cases where medical points are involved is by no means justified. They would be better able than intelligent laymen to estimate the value of certain kinds of evidence, but there would still be infinite chances for error. The proposed plan would certainly fail to right all the wrongs of the present methods, the real remedy for which is in a more discriminating estimation of what is to be accepted as expert testimony. The advantages of the plan could never counterweigh the reasons of public policy that have practically exempted physicians from jury duty; and we should protest against the imposition of such on a profession that in numberless other ways does more than any other for the public weal. This is saying nothing of the improbability of counsel ever accepting those who are so prominently wanting in the prime requisite of unintelligence.

THE REPORTED "CURE FOR LOCKJAW."

During the past week the papers have circulated reports concerning the discovery of another "wonderful cure," this time in the way of a cure for tetanus. The facts in regard to the matter, as we understand them, are as follows: Several months ago Dr. S. A. Matthews described before the Medical Club of the University of Chicago his experiments with "cell cathartics," as he terms them. His solution is a mixture of sodium chlorid, sodium sulphate, sodium citrate and calcium chlorid, which, when injected into the veins directly, seems to have much the same effect that similar solutions have in the body, causing fluids to leave the cells or interstices in the body, at least there is a great increase in the amount of fluid excreted by the kidneys of experimental animals, which is much in excess of the amount of fluid injected. According to Matthews' experiments, such intravenous infusion will rapidly wash out any toxic substance that may have been introduced, such as morphin, and also bacterial toxins. He performed a series of experiments on rabbits, which seemed to indicate that this solution in these animals was able to remove the toxin even after it had combined with the nervous system and produced symptoms, and to save the lives of many of the animals when the controls died. These results, with certain conclusions, were reported at the meeting that we have mentioned, but, so far as we have been able to learn, have not been published. Attention is called to the fact that Dr. S. A. Matthews is not to be confused with Prof. A. P. Matthews, who is assistant professor of physiologic chemistry at the University of Chicago, the newspaper accounts having given the title of the latter to the former. The name of Dr. S. A. Matthews does not appear in the circular of the university of April, 1903, as connected with the institution, although we understand that he is giving a course in pharmacology during the summer session. This case, which has been reported by the newspapers as cured by the saline cartharsis, is said to have had a long period of incubation and to have started out as a case of chronic tetanus, but after a rather protracted course had seemed to be growing worse, when this treatment was begun. The infusions were repeated frequently, and the boy has recovered. In other words, there is a single case of chronic tetanus that has recovered under this particular form of treatment. It seems much like the recent furor concerning the intravenous injection of formaldehyd in septicemia, but with this difference: formalin intravenous injection was opposed by experimental study previous to the public report, and also by clinical experience, the use of any substance that will increase renal elimination in tetanus is indicated in tetanus, and Dr. Matthews seems to have applied the results of laboratory experiments to a human case. An objectionable feature of the case is the prompt appearance of full accounts of the case in the daily press. Who is responsible for this we do not know, but the natural and proper result is to cause a profound and general scepticism among all physicians. However, such publicity does not necessarily brand the work as unscientific, and we trust that Dr. Matthews may continue his work, and wish him success in some more acute cases. Until such cases have been reported through professional avenues we recommend that the matter be held by the profession *sub judice*.

Medical News.

ILLINOIS.

Gift to Hospital.—Abram Brokaw, Bloomington, has made a donation of $30,000 to the Brokaw Hospital in that city.

Illinois Water To Be Analyzed.—The State Board of Health is about to make a systematic investigation of the water supplies of the different cities of the state for the purpose of discovering whether the water is likely to be prejudicial to health. The water will be collected under the direct supervision of the board, and a careful chemical and bacteriologic analysis will be made of each sample under the direction of Professor John H. Long of the Northwestern University, Chicago.

State Charities.—The quarterly report of the State Board of Charities shows a surplus of $192,294.11. The average number in the state charitable institutions was 11,165. The total per capita cost for maintenance was $40.27 gross, or $37.79 net. The following is the net per capita cost for the quarter in all the institutions: Elgin Insane Hospital, $41.79;

Kankakee Insane Hospital, $36.96; Jacksonville Insane Hospital, $37.65; Anna Insane Hospital, $33.44; Watertown Insane Hospital, $30.91; Asylum for Incurable Insane, $41.13; Asylum for Insane Criminals, $51.17; School for the Deaf, $52.61; School for the Blind, $51.53; Feeble-minded Asylum, $33.98; Soldiers' and Sailors' Home, $29.15; Soldiers' Orphans' Home, $51.04; Soldiers' Widows' Home, $49.91; Eye and Ear Infirmary, $56.97, and Training School for Girls, $42.30.

Chicago.

Will Enlarge Hospital.—Alexian Brothers' Hospital has purchased a plat of land adjacent to the hospital, 485 by 125 feet, for $10,000.

Personal.—Dr. G. Le Roy Brown, has returned from Europe. ——Dr. Ernst Riebel has been appointed an associate member of the County Hospital surgical staff.

General Hospitals Require No Frontage Consent.—Acting Corporation Counsel Fyffe has given an opinion to the effect that general hospitals are not required to secure the frontage consents of residents in the same block in order to build. The officials of Augustana Hospital applied for a building permit for an addition. Hospitals for the insane, inebriates and the treatment of contagious diseases require frontage consents.

Impure Milk.—Out of 760 samples of milk and cream analyzed in the health department laboratory during the week ended August 15, 60 were found below grade. Among these 760 samples from all sources there were 112 taken at the trains—before the milk had come into the possession of the city dealer. Out of these 112 samples four were found below the standard of butter fat and 40 below the standard of total solids.

MARYLAND.

Baltimore.

Personal.—Dr. A. D. McConachie is at Lucerne, Switzerland. ——Dr. Walton Bolgiano is at Asbury Park.——Dr. T. A. Ashby is in Virginia.——Dr. J. B. Crenshaw has returned after nearly a year spent in study at Berlin.——Dr. Samuel Johnston is at Narragansett Pier.

Deaths of the Week.—During the week ended August 15 there were 190 deaths, an annual death-rate of 17.66 per 1,000. This is much below that of the corresponding week of the three previous years. Thirty-five of the deaths were from diarrhea; 6 from typhoid fever, and 3 from dysentery.

Prevalent Diseases.—Scarlet fever and diphtheria are very prevalent, especially in East Baltimore. There were 115 deaths from the former in July and 94 from the latter. The health department will make every effort to prevent their spread on the opening of the public schools in September.

NEW YORK.

Incubator at Coney Island.—The infant incubator which was so successful at the Pan-American Exposition is now stationed at Luna Park, Coney Island. At a recent visit, there were fifteen premature-born children alive and thriving in the hospital.

Influenza.—The State Board of Health has issued a bulletin in which is reviewed the reports on influenza for the first half of the present year. It is stated that more deaths are ascribed to influenza in the first year of life than in the next twenty years, and that only one-fourth of the deaths occurred before the age of 50. The greatest number of deaths occurred between the ages of 70 and 80, and the disease was most prevalent in December, January, February and March. It is to be noted that at all ages, with the exception of the first year of life, more females than males succumb to the disease.

Buffalo.

Personal.—Dr. Grosvenor Trowbridge has returned from a visit to Cayuga Lake.——Dr. Julius Ullman has returned from Atlantic City and New York.——Dr. Roswell Park has taken a trip up the lakes.——Health Commissioner Green is spending his vacation fishing in Northern Canada.

Substitute Internes.—Recently there has been a great deal of agitation in one of the daily papers concerning young internes in the Buffalo hospitals. In one or two instances the medical internes were found to be senior students. It is often customary to have students substitute for internes who are on short vacations. They, however, never have the responsibility of examining or treating cases, but attend to such duties as are required in the laboratory, making urinalyses and blood examinations, etc.

July Statistics.—The monthly report of the Department of Health for July shows an annual death-rate of 16.2 per 1,000. The principal causes of death were as follows: Consumption, 33; cholera infantum, 40; pertussis, 7; typhoid fever, 10; debility, 16; marasmus, 16; cancer, 31; apoplexy, 19; meningitis, 14; tetanus, 1; valvular heart disease, 19; pneumonia, 22; appendicitis, 8; cirrhosis of liver, 4; gastroenteritis, 25; nephritis, 15; diabetes, 8, and violence 43. The total deaths were 513, as compared to 413 for July, 1902.

Milk Waterers Prosecuted.—Twenty-one milk dealers who water milk are being prosecuted by the commissioner of agriculture. The department originates its own cases; agents from time to time unexpectedly examine the milk in peddlers' wagons. If it falls below the test a chemical analysis is made, and if this shows the milk contains more water than is natural suit against the milkman is begun. These suits are tried in the Supreme Court, and the penalty imposed by the law is $50 to $100 for the first offense and from $100 to $200 for the second offense.

New York City.

New Hospital and Dispensary.—A new dispensary and hospital has been established at 347 East 116th street, having accommodations for 20 patients. The following constitute the visiting staff: Drs. Salo Cohn, Reuben Cronson, I. Goldstein, Herman Jarecky, Robert Kunitzer, I. Levin, Louis Lichtschein, J. Mark and Leopold Marcus.

The New Bellevue Hospital.—Negotiations have been going on for some time looking to the purchase of land adjoining the present Bellevue Hospital in order to provide a site for the new hospital building. It is now stated that all obstacles have been removed and that it is expected to begin the erection of the buildings early in the fall. When acquired the total area of grounds is represented by all that tract of land lying between Twenty-sixth and Twenty-ninth streets, First avenue and the East River.

The Infant Hospital of New York was recently visited and found to be most complete in all its requirements. Of especial interest was the steam room for infants suffering from croup or pneumonia. The entire bed is placed in this room, while the nurse watches the patient through a glass partition. It is an excellent suggestion for use in pneumonia and influenza, as well as nephritis of adults. In the laboratory work was being carried out on the bacteriology of summer diarrheas with reference to the Shiga bacillus as the causative factor. There were some summer diarrhea cases in the hospital, but scarcely any of the severer cholera infantum variety on account of the unseasonably cool weather.

Barber-Shop Sanitation.—Although steps have been taken in the past to secure certain sanitary reforms in barber shops, such regulations have been chiefly honored in the breach. The Board of Health now gives warning that after September 1 the new rules will be rigidly enforced. These rules provide that the barber shall wash his hands with soap and hot water before attending any person; that the use of powder puffs shall be abolished; that a towel shall not be used for more than one person without being washed; that sponges shall no longer be used; that mugs, combs, razors, clippers and scissors must be rinsed in boiling water or in some germicide each time after use; that alum or other astringents shall not be used except in the form of powder, and that a copy of the regulations must be conspicuously posted in each shop.

GENERAL.

Committee on Public Health.—Dr. Heman Spalding of the Department of Health of Chicago has been appointed chairman of the Committee on Public Health of the American Medical Association.

All Medical Schools Now Have a Four-Year Course.—It is encouraging to note that while two years ago we reported three medical colleges as requiring only three years' course for a degree, last year there was only one three years' school left, and this year there is none.

Dallas Medical College.—Belated statistics from this Texas school, mentioned in the Educational Number, show that it has a faculty of 30; fees: matriculation $5, annual tuition $75, graduation $25 extra; the enrolment 1902-3 was 213, graduates 30. The next session opens Oct. 1, 1903.

FOREIGN.

International Congress of School Hygiene.—Such prominent men as Baginsky, Hoffa, Eulenburg, Cohn and Hueppe are

interesting themselves in the first international congress for school hygiene. It is planned for next spring at Nuremberg.

"Archives Internationales de Chirurgie."—Professor Ch. Willems of Ghent has issued the first number of this new periodical. The articles are published in the mother tongue of the writer, followed by a summary in four other languages, English, French, German, Italian or Spanish.

Touring Scholarships.—The Touring Club of France publishes in the last *Presse Médicale* a notice to the effect that two medical students, with high honors in their classes, will be given a free bicycle trip with a party touring through the Alps, down to the Mediterranean and home by the Rhone.

The Discoverers of Radium.—Last month the wife of Dr. P. Curie, professor of physics and industrial chemistry at the Paris Ecole Municipale, presented her thesis at the Sorbonne for the degree of doctor ès sciences. Her subject was "Radium," whose properties were discovered by the collaborated research on uranium of this couple.

French Congress of Surgery.—The sixteenth annual meeting of the French Association de Chirurgie will be held at Paris, October 19 to 24, as previously announced. Prof. C. Périer will preside, and Duret, Lille, will deliver the address on "Tumors of the Brain," and Dr. Hartmann on "Exclusion of the Intestine," the two subjects appointed for discussion.

Medal for Cornil.—Professor Cornil of Paris reaches the time limit of his service at the Paris Hotel Dieu this year. He is to be presented by his friends with a medal commemorating his work in the history of pathology and bacteriology. A bronze copy of the medal will be sent to those who subscribe $5, to be sent to M. Alcan, 108 boulevard Saint-Germain, Paris.

Pathogenic Agent of Rabies.—Dr. A. Negri, Golgi's assistant at Pavia, announced last March the discovery of the specific micro-organism of rabies. He now states that he has examined more than 100 dogs with natural or laboratory rabies, and has never failed to find the specific micro-organism in the nerve centers. On the other hand, he has never found it in other dogs.

French Congress of Alienists and Neurologists.—The thirteenth congress convened at Brussels, August 1, and discussed the questions appointed for the order of the day with addresses by Claus, Antwerp, on the first theme, "Catatonia and Stupor"; by Klippel, Paris, on the second, "Histology of General Paralysis," and by Trenel, Saint-Yon, on the third, "Treatment of Agitation and Insomnia in Mental and Nervous Disease."

Grassi's Studies of Goiter and Cretinism.—When Grassi undertook the study of the etiology of malaria he went to reside in a malaria-infested district, where he spent months in collecting and examining mosquitoes. He has now entered on similar research in regard to the etiology of goiter and has taken up his residence in a small village in a valley on the Italian slope of the Alps, Cedrasco, in the Veltlin district. Our readers will remember that one of the large prizes was conferred on him at the Madrid congress.

Prize Offered for Pamphlet on Advantages of Bathing.—The German Public Bath Association offers three prizes of $25, $37 and $50 for the best pamphlets or circulars portraying the advantages of systematic bathing. The one winning the prize will be distributed and placarded for the purpose of educating the masses and also to arouse interest to provide better facilities for public baths. Competing articles should be sent to the office of the association, Karlstr. 19, Berlin N.W., VI., where further particulars may be learned on application.

German Medical Exhibit at the St. Louis Exposition.—The Germans are planning to make an elaborate exhibit of everything connected with medical instruction, especially in respect to diagnostics and therapeutics. Professor v. Bergmann is in charge of the matter, assisted by a committee, which includes Kutner, Kraus, Mikulicz, Orth, Rubner, Waldeyer, Wassermann and others, nearly all of Berlin. A circular inviting co-operation is to be sent forthwith to all the prominent institutes and firms throughout Germany.

Cause of the Pope's Death.—The diagnosis of the physicians, "catarrhal inflammation of the lung, with a hemorrhagic pleuritis," was confirmed by the autopsy. Our Italian exchanges state that with the exception of this one lung and pleura, all the organs were found normal, except for a small patch of atheroma on the aorta. The number of "sovereign remedies," amulets, charms and similar articles, sent to the physicians and to the Vatican from all parts of the world, to be used on the illustrious patient, is almost beyond belief.

Silver Jubilee of Professor Pawlow.—A committee has been formed in Russia to get up a "Festschrift," to contain works on physiology and pharmacology, to be presented in February, 1904, to Prof. J. P. Pawlow on the occasion of the twenty-fifth anniversary of his entering on his scientific career. Professor Ssimanowski has the matter in charge. At the same time a fund will be endowed in Pawlow's name for a prize to be awarded for important works on physiology. Contributions for the endowment fund and for the "Festschrift" may be sent to Dr. Hanicke, Lopukhinskaya No. 12, St. Petersburg.

Circular Warning Against Venereal Diseases.—The German Preventive Association has empowered professors Erb, Jadassohn and Fraenkel to write the text for a warning circular to be sent to all the physicians of Germany for free distribution among their patients. It will point out the dangers of infection, the necessity of early and thorough treatment and the precautions to avoid infecting others. The association also recently voted to petition the government for more stringent measures against charlatans, citing particulars in regard to the harm done by their practices in the domain of venereal disease.

Lister Institute of Preventive Medicine.—A movement was started in London in 1896, the centenary year of Jenner's experiments in proof of the efficacy of vaccination, to perpetuate his name by some suitable memorial. It was finally decided to change the name of the British Institute for Preventive Medicine by substituting the word "Jenner" for "British." It was found, however, that a commercial firm had a prior claim to the name Jenner Institute, and the complications arising were so many and varied that it was finally decided to give up the name. Instead of again assuming the old name, another man was honored and his name perpetuated by calling it the Lister Institute of Preventive Medicine. Jenner's name is also to be perpetuated, as there has been endowed a Jenner memorial studentship in connection with the Lister Institute.

The Approaching International Congress of Ophthalmology.—Elaborate preparations are being made for this congress, which will be held at Lucerne, Switzerland, Sept. 19 to 21, 1904. Only one official subject has been announced for discussion: "The Question of Indemnity as Regards the Value of an Eye, Lost or Injured." Addresses on this subject have been requested from Axenfeld of Freiburg, Sulzer of Paris and Würdemann of Milwaukee. The committee of organization includes Snellen of Utrecht, Barde of Geneva, Dufour of Lausanne, Haab of Zurich, Pflüger of Berne, Landolt of Paris and Mellinger of Basle. The latter is the treasurer, and will send the admittance card on receipt of the fee of $5. Further particulars may be learned from Dr. de Schweinitz, 1401 Locust street, Philadelphia, or Dr. Coote, Quebec, Canada, who have been appointed correspondents for this country. Communications destined for the congress, if received before May 1, 1904, will be published and sent to each member of the congress with his admittance card. The reading out of the papers may thus be dispensed with, and the author will merely state his conclusions, thus giving time for discussions in the mornings and demonstrations in the afternoons. The committee are anxious to bring together at this congress all objects, old and new, relating to ophthalmology. They also plan an official banquet and numerous fêtes and excursions.

Panhellenic Medical Congress.—The second congress of Greek-speaking physicians and surgeons was held at Athens, May 17 to 23, as announced. A large number of communications on anatomy, physiology, etc., were presented, but most of the themes revolved around the study of malaria. Its relations to the circulatory and nervous systems were discussed, with addresses. Triantaphyllides of Batoum has noted 67 cases of cardiopathies in an experience with 12,000 malarial subjects. The endocardium was affected in 39, with lesions of the mitral valve in 23. In 16 the endocardium was ulcerated. In 26 cases the myocardium was affected; the pericardium in 3; the aorta in 1. Manoussos, Athens, regards malaria merely as a predisposing cause for heart affections, phlebitis, etc., but Coryllos, Patras, is dubious, and cited an instance in which a polyphlebitis developed in an old malarial subject, with fever, pains, tenderness and slight edema, all of which disappeared under treatment with the usual measures supplemented by constant use of quinin. Kanellis, Athens, stated that phlebitis frequently occurs consecutive to malaria, and that the latter may induce both functional and organic heart

trouble, although organic lesions are rare. He has observed cases of a malarial aortitis in patches, usually on the ascending aorta, also of malarial aneurism of the aorta, angina pectoris from constriction of the coronaries, and of Raynaud's disease. Maroudhis, Athens, called attention to the great value of lime for extermination of mosquitoes. One part of quicklime to 100 parts of water will kill the larvæ in the water in two and one-half to five hours if pulverized, and if thrown into the water in chunks the larvæ are all killed in twenty-four hours at farthest. The powdered lime forms a coating on the surface which has a supplementary insecticidal effect. Koumoulis announced that cholera germs on dry bank bills all die in less than an hour.

Fifth Brazilian Medical Congress.—This successful national congress was held at Rio de Janeiro, June 16 to 20. The communications were mainly on the subject of tropical diseases and allied topics. Great interest was aroused by the results of serum treatment of plague reported by Dr. Victor Godinho of San Paulo. He is accustomed to administer the anti-plague serum by the intravenous route and in amounts much larger than elsewhere ventured, even as much as 60, 80 or 100 gm. of the serum at once. The effect on the hyperpyrexia is remarkable. The temperature drops several degrees almost immediately. He exhibited a large number of curves showing the benefit derived from the serum treatment in this respect, which practically arrests the disease process. Serum treatment of snake bites was discussed by Dr. Vital Brazil, also of San Paulo, who described important experiences with specific serum prepared at the institute in his charge. It proved much more effective than the control tests with Calmette's anti-venom serum. The members of the congress were so impressed with his success in curing snake bites with this anti-ophidic serum, as he calls it, that a resolution was passed urging the state to appropriate the funds necessary to send him to Europe to compare and make known what Brazil has accomplished in this line. He reported 21 cases in which persons known to have been bitten by venomous snakes and treated with the serum recovered with slight, if any, clinical symptoms, while even a fraction of a milligram of the venom causes severe symptoms in animals. In three of the cases the symptoms developed with extreme rapidity and gravity, but all subsided after injection of 20 to 60 c.c. of the serum. Two hours had elapsed in one case and three in another. He makes three kinds of anti-venom serum, including one for rattlesnake bites. His article is published in full in the *Revista Medica de S. Paulo*, No. 2, 1902, and No. 13, 1903. The *Brazil Medico* is publishing a detailed account of the congress.

LONDON LETTER.

Plague in India.

Plague is becoming more widespread every year in India, and the government is confronted with a very serious problem. The great difficulties in applying measures to check the spread of the disease which are offered by the ignorance and religious prejudices of the natives have been before described in THE JOURNAL. The disease is now widespread over all the most densely populated parts of India excepting Eastern Bengal and Assam. In April last over 30,000 deaths per week were recorded. The nature of the problem to be faced by the government will be realized if it is remembered that in each district of 1,000,000 inhabitants there are four administrative and one medical European officer who are more than fully occupied without any extra plague work. Coercive measures prove futile and have led to wholesale concealment and flight of infected persons to previous uninfected places. Compulsory isolation, evacuation and disinfection, except in the first few cases in any locality, have been abandoned as useless. In their place facilities for voluntary inoculation, for disinfection of infected houses, and for voluntary evacuation are afforded. A huge scheme for the inoculation of 10,000,000 of people in the Punjab was wrecked by the lamentable mishap in November, 1902, by which 19 natives died from tetanus following the inoculation (THE JOURNAL, April 25, p. 1153). A most favorable start had been made, 200,000 natives had been inoculated in the first two weeks, with the aid of a large number of specially imported doctors. After the mishap the inoculations had to be suspended. Later they were resumed, but the harm done was irrevocable. It is indeed remarkable that 300,000 more were carried out. The results, so far, have been satisfactory: the proportion of deaths to cases among the inoculated was 25 per cent., among the uninoculated 60 per cent. The advantages of substituting voluntary for compulsory measures in Allahabad is shown by the following facts: When the disease was established compulsory measures were abandoned and the system was adopted of simply offering advice and assistance. This policy established good feeling between the people and the authorities and at least checked the ravages of the disease. Only 7.5 per cent. of the houses disinfected during 1901-02 had cases of plague in 1902-03, but of 51 infected houses which escaped disinfection 43 showed return cases of plague. In the last season's work in only 0.5 per cent. of disinfected houses did cases recur within the next ten days, and in 0.4 per cent. after ten days. The people are beginning to learn in the dear school of experience the lesson to evacuate their villages as soon as plague appears or as soon as rats begin to die.

The Anti-Malaria Campaign.

The Liverpool School of Tropical Medicine has just issued a most important and practical paper on the prevention of malaria in the tropics. In 1902 the school sent an expedition to the Gambia, which was conducted by Dr. Dutton. Malaria was found very prevalent in the colony. Of the native children examined 80 per cent. harbored malarial parasites in their blood. The liability of infection of Europeans occurred soon after the rains were established, and lasted up till the end of November. Mosquitoes were found to be largely bred by white men on their premises. In one factory yard 6 barrels, 17 tubs and 8 small wells were found to be breeding places of culex, stegomyia and anopheles. During the dry season, November to May, there are no natural breeding places for mosquitoes in Bathurst. The people breed mosquitoes solely on their own compounds. A crusade against mosquitoes has been inaugurated. One hundred and thirty-one cartloads of old tin pots and other rubbish have been removed.

Correspondence.

The Work of Mr. Robert Jones.

LIVERPOOL, July, 1903.

To the Editor:

Liverpool is known to everyone interested in the treatment of deformities as the home of the late Hugh Owen Thomas, whose original and practical mind has left an indelible impression on surgical technics. Carrying on the work in the same building, and inspired by at least an equal enthusiasm, his gifted nephew and successor, Mr. Robert Jones, is conducting one of the most remarkable orthopedic services in existence. This work is well known to specialists, but must be seen to be appreciated, and as it was the writer's privilege, through Mr. Jones' courtesy, to observe the work for several days, these impressions have been jotted down with the feeling that it deserved to be more widely known among the profession at large.

Mr. Jones begins his day after an early breakfast by visiting his patients at their homes or in the various private hospitals where they have been placed. About 11 o'clock he returns to his office, where he passes quickly from one patient to another in the various rooms, spending but a moment with each, but seizing at once with an almost intuitive instinct the nature of the affection and the essential indication for treatment. Small operations, such as tenotomies and mobilization of adherent joints, are often done on the spot, his lively optimism and cheerful tact being in many cases the only anesthetic employed. Sinuses are dressed, fractures splinted, apparatus applied and joints *x*-rayed by several experienced associates, and soon the place is a veritable hive of interested activity, a hopeless labyrinth to one without the clew. A dozen cases are started, none are finished, patients crowd the rooms and wait in corridors and closets, everything to the outsider is hopeless confusion, but one thread after another is picked up by the busy master, one difficulty after another solved on the spot, order is brought out of chaos, and in an incredibly short space of time, each patient had had the proper diagnosis, and the proper treatment applied, and has been instructed about home management and when to call again.

This attempt at a description is a sober, but inadequate, account of what actually takes place. The means used are of the simplest description: five or six types of simple soft steel

supports are used for the ordinary cases, and various sizes of these are kept in stock, so that relief may usually be had at the first visit; these supports are made on the premises, the dressings are as simple as the splints. An orthopedic instrument maker is always in attendance to take orders for more elaborate appliances when needed; no plaster of paris is used. The more serious operative cases are referred to one or another of Mr. Jones' hospital services.

The writer has never seen anything approaching this mastery of the clinical material or of the technical means. This was equally displayed in the work at the Royal Southern Hospital, where Mr. Jones has a surgical service. On his regular operating day, Wednesday, he often exceeds twenty operations. On the Wednesday at which the writer was present he did twenty-six; beginning at 2:30 p. m. he finished at 9:30, doing every operation but one himself, which was done by the house surgeon. The operations were done on a table, which was also used as a stretcher, and by having two of these stretcher-tables and two anesthetists, the operations followed each other with almost clocklike punctuality at an average interval of fifteen minutes, and without any appearance of haste. When one considers that this included dressings in most cases, and that there were three knee resections, and other operations of equal importance, the performance seems little short of marvelous. All the operations but one were undertaken for the relief of deformity or joint disease. Among those of special interest were the excision of large pieces of the adductors of the thigh for spastic paraplegia, excision of the peronei for persistent peroneal spasm, excision of a large diamond of skin from the front of the arm and forearm, with suture of the edges for flail-elbow, excision of a wedge of bone from the top of the foot for severe paralytic pes cavus in an adult, correction of knock-knee and of a hip deformity, the section of the bone being made with a modified Adams' saw, arthrodesis of the ankle with removal of a wedge of bone for paralytic calcaneo-valgus, and several cases of club-foot and flat-foot corrected by the Thomas wrench, in the use of which Mr. Jones is exceedingly expert. Here, also, no plaster was used, simple adjustable splints being in readiness to hold the part in its corrected position. Many of the club feet and rhachitic deformities were sent home the same day.

Here, as in the office practice, the striking thing was the clear and quick appreciation of the gist of the matter in hand, and the instant application of the simple and effective remedy. Another striking feature of the work was the hearty and intelligent co-operation of his associates. Mr. Jones has attracted to himself a group of young men of skill and experience, who vie with each other in their devotion to him and to the work, and whose team play, if I may use the expression, is remarkably effective; there is no question of precedence, the right man is always on hand to do the right thing in the right way. The spirit of the place is as fine as the work and personality of the master. Owing to Mr. Jones' approaching vacation the writer was unable to see his regular Saturday out-patient clinic at the hospital or his free Sunday at the office, where he treats some 7,000 cases on the alternate Sundays of a year, but enough was seen to make an impression that can never be forgotten. HENRY LING TAYLOR.

The Transmission of Yellow Fever.

NEW YORK CITY, Aug. 11, 1903.

To the Editor:—On my arrival from Cuba I perused with great interest the article of Dr. James Carroll on "The Transmission of Yellow Fever," published in THE JOURNAL, May 23, 1903, the replies made to it by Drs. Carlos I. Finlay and Aristides Agramonte, both of Havana, Cuba, and Dr. Carroll's last rejoinder.

I wish briefly to state a few facts on the matter discussed by pointing out the principal differences between the experiments of Drs. Finlay and Delgado, on one side, and the Army Yellow Fever Commission on the other. The contrast is truly remarkable, and fully explains the point in question.

Finlay and Delgado were trying to find in the *culex* mosquito a prophylactic agent by means of which they could make non-immune persons immune to yellow fever, very much as it happens with the vaccine virus against smallpox; and the army commission were trying with the *Stegomyia fasciata* mosquito to produce true yellow fever with all its dangers and natural virulence.

Finlay and Delgado claimed they found that in from two to six days the contaminated mosquito causes an attenuated attack of the disease (the so-called "acclimation fever") which renders immune the person so bitten. The Army commission found that in that space of time nothing at all happens to the person so treated, and that it requires a lapse of from twelve to seventeen days, or longer, for the mosquito to transmit genuine yellow fever, not acclimation fever.

Finlay and Delgado did not say to what sex their culex mosquito belonged. The Army commission distinctly stated that it was the female *Stegomyia fasciata* mosquito, and only the female that transmits yellow fever.

Finlay and Delgado declared that the culex mosquito was oue way in which yellow fever can be conveyed from a sick person to a healthy non-immune, leaving to be supposed that the disease might also be transmitted by other means. The Army commission emphatically asserted that the female *Stegomyia fasciata* mosquito is the only and exclusive means by which yellow fever is transmitted from one person to another.

Finlay and Delgado had no idea of exterminating mosquitoes because they wanted them, as a prophylactic agent to render immune the persons liable to get yellow fever. The Army commission clearly and distinctly demanded the extermination of mosquitoes because they were the true agent of propagation of yellow fever. To such a point the army commission affirmed this as to state that "in the absence of the mosquito the yellow fever patient is harmless."

If we are to judge a scientific medical discovery by the statistics presented in its favor, Dr. Carlos I. Finlay has no reason to claim the discovery of the transmission of yellow fever by mosquitoes. He is perhaps entitled to the suggestion, although some claim might be made in favor of Dr. Josiah C. Nott, Mobile, Ala., who in 1848 published an article on "Yellow Fever Contrasted with Bilious Fever. Its Mode of Propagation and Probable Insect or Animalcular Origin," but nothing else.

Out of a total of 87 persons inoculated by mosquito bite by Finlay, he obtained one case which presented a mild albuminuric attack, thirteen cases in which only "acclimation fever" occurred, and seventy-three negative results.

It is true that since then Dr. Finlay has changed his former opinion, as Dr. Carroll well said: "The original theory of Finlay has been variously modified by him from time to time to meet possible contingencies."

A. M. FERNANDEZ YBARRA, M.D.

The Turning Down of the Old Practitioner.

PLYMOUTH, IND., Aug. 8, 1903.

To the Editor:—I notice in THE JOURNAL, Aug. 8, in the report of the Ohio State Board of Registration, that candidate 172, graduate of Columbus Medical College, class of 1878, failed with a per cent. of 65 5/9, and, in fact, all who failed are old graduates with the exception of one, and that one a foreigner. All who passed are graduates of recent date. Now the physician who graduated in 1878, with about a quarter of a century of practical experience to his credit, ought not to be turned down by the Ohio board, or any other state board, and state reciprocity should be so arranged that a physician licensed by the state in which he practices, and endorsed by the medical profession or county or state medical societies, should obtain a license to practice in any state on presentation of his state license and recommendation by the secretary of the state board of medical registration which issued that license showing that he is in every way eligible for registration.

The trouble with the so-called reciprocity is that it has too much red tape. A physician who can legally practice in one state ought to be legally able to practice in another state

without having to submit to the indignity of a technical examination before a board who are not appointed for their qualifications, but for their political influence.

A licensed physician in any state should be able to practice in any state or territory that is under the American flag, and any physician who has legally practiced continually for ten years or more ought not to be questioned regarding his capabilities, but should be considered competent and recognized as such.

T. A. BORTON.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

PERSISTENT HEMORRHAGE DURING AND FOLLOWING OPERATION.

MANILA, P. I., July 9, 1903.

To the Editor:—1. In cases of non-coagulability of the blood where an operation has been begun for, say, cholelithiasis, is it possible to arrest the hemorrhage from the incised abdominal muscles, the abdomen not having been penetrated?

2. What would be the proper procedure when excessive oozing is encountered from the incised muscles in a case of operation of cholecystotomy where there had been no penetration of the abdominal cavity—to stop the operation or to enter the abdominal cavity and then, by means of sutures of the cut muscles, stop the hemorrhage?

3. Are deaths common from hemorrhage in cases where only the muscular tissue is involved, such as in an incision for reaching the liver or its adnexa without penetration of the abdominal cavity?

H. W. Y.

ANS.—1. Non-coagulability of the blood and persistent hemorrhage are not necessarily associated conditions. In hemophilia the blood may coagulate firmly after it leaves the vessels, yet fatal oozing occurs from even a slight wound in spite of all effort to prevent. Fatal hemorrhage from persistent oozing has also followed operations on the gall tracts in the presence of jaundice, also in leukemia. The question of whether the incision penetrated the abdominal cavity or only extended part way through the wall would not influence the question of hemorrhage.

2. This question does not admit of a categorical answer. The judgment and experience of the surgeon in charge and the nature of the case would have to determine the best course to pursue.

3. Deaths from hemorrhage in cases mentioned are not common, but may occur in the conditions mentioned in answer to Question 1. The depth of the incision, whether it extended completely or only partially through the abdominal wall, would not influence the result.

State Boards of Registration.

The District of Columbia Board of Medical Supervisors report by Dr. Wm. C. Woodward, secretary, that at the examination held at Washington, July 9 to 14, 1903, the number of subjects examined in was 17; total written questions, 80; percentage required to pass, 75. The examination was partly oral and partly written. There were 25 examined, and 23 passed:

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
379	R.	Columbian University	1903	90.12
377	R.	Columbian University	1903	94.93
375	R.	Columbian University	1903	90.90
398	R.	Columbian University	1903	93.43
396	R.	Columbian University	1903	92.50
391	R.	Columbian University	1903	90.68
390	R.	Columbian University	1903	86.71
389	R.	Columbian University	1903	90.31
384	R.	Georgetown University	1902	88.59
397	H.	Hahnemann Med. Coll., Philadephia	1903	85.46
393	H.	Hahnemann Med. Coll., Philadelphia	1903	87.03
387	R.	Howard University	1902	89.31
380	R.	Howard University	1903	81.04
378	R.	Howard University	1903	77.00
394	R.	Howard University	1903	79.59
383	R.	Johns Hopkins University	1903	84.09
382	R.	Johns Hopkins University	1903	87.87
399	R.	Johns Hopkins University	1903	88.28
388	R.	National University (D. C.)	1903	85.40
386	R.	National University (D. C.)	1903	81.56
392	R.	National University (D. C.)	1903	80.78
376	R.	University of the City of New York	1897	86.47
385	R.	University of Pennsylvania	1895	91.90

FAILED.

381	R.	Howard University	1903	74.78
395	R.	Howard University	1903	74.43

The South Carolina State Board of Medical Examiners, of which Dr. S. C. Baker, Sumter, is secretary, reports the examination held at Columbia, May, 1903, as follows: Number of subjects examined in, 15; total questions, about 125; percentage required to pass, 75; written examination; total number examined, 51; passed, 47; failed, 4.

PASSED.

Candidate.	Sch. of Pract.	College.	Year Grad.	Per Cent.
2	R.	Medical College of South Carolina	1901	85.4
7	R.	Medical College of South Carolina	1901	94.1
13	R.	Medical College of South Carolina	1901	77.0
17	R.	Medical College of South Carolina	1901	82.5
24	R.	Medical College of South Carolina	1901	82.5
25	R.	Medical College of South Carolina	1901	75.5
31	R.	Medical College of South Carolina	1901	77.1
32	R.	Medical College of South Carolina	1901	79.0
33	R.	Medical College of South Carolina	1901	84.5
34	R.	Medical College of South Carolina	1901	91.1
35	R.	Medical College of South Carolina	1901	91.3
36	R.	Medical College of South Carolina	1901	76.0
39	R.	Medical College of South Carolina	1900	89.1
42	R.	Medical College of South Carolina	1901	75.4
44	R.	Medical College of South Carolina	1901	85.5
50	R.	Medical College of South Carolina	1901	82.1
53	R.	Medical College of South Carolina	1901	91.2
54	R.	Medical College of South Carolina	1901	76.1
20	R.	Medical College of South Carolina	1901	84.4
3	R.	Meharry Medical College	1903	77.0
47	R.	Meharry Medical College	1903	99.4
9	R.	University of Maryland Med. Dept.	1902	82.4
14	R.	University of Maryland Med. Dept.	1903	90.1
18	R.	University of Maryland Med. Dept.	1903	89.2
19	R.	University of Maryland Med. Dept.	1902	87.1
26	R.	University of Maryland Med. Dept.	1903	88.0
38	R.	University of Maryland Med. Dept.	1903	90.2
41	R.	University of Maryland Med. Dept.	1902	85.4
51	R.	University of Virginia Med. Dept.	1901	92.6
5	R.	Atlanta Medical College	1894	76.2
15	R.	Atlanta Coll. of Phys. and Surgs.	1903	89.0
6	R.	Leonard Medical College	1903	85.6
30	R.	Leonard Medical College	1903	83.6
22	R.	Leonard Medical College	1903	81.1
23	R.	Leonard Medical College	1903	84.2
43	R.	Leonard Medical College	1903	77.0
8	R.	Hosp. Coll. of Med., Louisville, Ky.	1902	77.6
11	R.	Woman's Med. Coll. of Pa.	1895	84.5
21	R.	North Carloina Medical College	1903	83.5
49	R.	North Carolina Medical College	1902	85.6
27	R.	Tennessee Medical College	1899	80.0
37	R.	Southern Medical College, Atlanta, Ga.	1895	77.5
40	R.	Maryland Medical College	1903	75.5
4	R.	Med. Dept. University of Georgia	1903	84.6
45	R.	Med. Dept. Univ. of Cincinnati	1902	82.0
48	R.	Coll. of Phys. and Surgs., Baltimore	1903	88.5
52	R.	Medico-Chir. Coll., Philadelphia	1902	78.5

FAILED.

1	R.	Atlanta Coll. of Phys. and Surgs.	1903	71.2
16	R.	Leonard Medical College	1902	*77.2
28	R.	University of Georgia	1899	64.1
46	R.	Maryland Medical College	1902	71.0

* While this man's general average was 77.2, he made only 46 on practice of medicine.

Deaths.

Andrew Russell Barbee, M.D. University of Pennsylvania, Philadelphia, 1851, Point Pleasant, W. Va., died, August 51, from heart disease, aged 76. He was surgeon in the Confederate service during the Civil War, member of the state senate, president of the U. S. Board of Pension Examiners, secretary of the State Board of Health, etc. While in the senate of West Virginia he was the author of the bill regulating the practice of medicine and surgery, and that creating the State Board of Health.

Thomas J. Yarrow, M.D. University of Pennsylvania, Philadelphia, 1861, died at his home in Philadelphia, August 6, as a result of an injury sustained when thrown from his carriage last October, aged 63. He served in the Union Army during the Civil War.

William H. Amiss, M.D. University of Pennsylvania, Philadelphia, 1853, died at Sperryville, Rappahannock County, Va., August 8, aged 73. During the Civil War he was surgeon in the Army of Northern Virginia, C. S. A.

Ernest H. Lueke, M.D. Western Reserve University, Cleveland, 1898, of Cleveland, was drowned while swimming in Lake Erie, August 5, aged 25.

Adolph Cudell, M.D. Western Reserve University, Cleveland, 1898, of Cleveland, was drowned while swimming in Lake Erie, August 5.

J. W. Shaw, M.D. Saginaw Valley Medical College, Saginaw, Mich., 1901, died at his home in Long Beach, Cal., August 1, aged 37.

John N. Wheat, **M.D.** Western College of Homeopathic Medicine, Cleveland, 1852, died at Austin, Minn., July 25, aged 86.

John M. Trembly, **M.D.** Miami Medical College, Cincinnati, died at his home in Butler County, Ohio, July 24, aged 73.

John H. Kinyoun, **M.D.** New York University, 1859, died at his home in Centerview, Mo., July 27, aged 78.

Deaths Abroad.

Dr. Sigmund **Fuchs** of Vienna died at Borderbrühl, July 28, aged 44. He was professor of physiology and chief of the Institute of Physiology at Vienna. His name is well known by his numerous contributions to scientific literature.

Dr. Immanuel **Munk**, an eminent physiologist and chief of the Institute of Physiology at Berlin, died there July 31, aged 51.——**Dr. Leopold Fischer,** privat docent of psychiatry at Heidelberg, died July 30, aged 73.——**Dr. Rudolf Trzebicky,** professor of surgery at Cracow, died there July 22, aged 42. ——**Dr. J. Bougle,** one of the younger set of medical men and journalists at Paris, son and grandson of physicians, died there, July 20, aged 35. He was a collaborator on the *Archives Gén. de Médecine*, and had recently published a large work on the surgery of arteries, veins, lymphatics and nerves.

Dr. **Nocard**, the famous bacteriologist, professor at the veterinary school at Alfort, France, of which he was the chief for several years, died there August 1, aged 53. His last prominent appearance was at the Antituberculosis Congress at London, where he maintained his views in regard to the transmissibility of bovine tuberculosis to man, combating those advanced by Koch. Nocard's communications to the *Académie de Médecine* and to scientific journals have been important contributions to our knowledge of human and animal pathology and the relations between them. He died after a brief illness, in the midst of active work.

Dr. W. **S. Playfair,** one of the best-known obstetricians and gynecologists in Great Britain, died, August 13, at St. Andrews, Scotland. He received his degree of M.D. from Edinburgh in 1856, but possessed many other degrees and qualifications, both ordinary and honorary. His text-book on obstetrics has been one of the standards in Great Britain, and his numerous other contributions have maintained his reputation. He has held many high honorary and other positions in his own country, and has been the recipient of high honors from foreign countries. His reputation as a medical teacher was high; he was long connected with the chair of obstetric medicine in King's College. Beside his several obstetric works, which have gone through many editions, he was co-editor with Prof. Allbutt of a "System of Gynecology" published in 1896, and of numerous papers in medical journals, including some on subjects not directly related to his specialty. He is remembered as having had the unfortunate experience of being mulcted $60,000, in a suit a few years ago. It hardly seemed to the medical profession that justice was done him in that case. Of late years he has been less conspicuous, but his death leaves a notable gap among the prominent physicians in Great Britain.

Book Notices.

A Reference Handbook of the Medical Sciences, Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By Various Writers. A New Edition, Completely Revised and Rewritten. Edited by Albert H. Buck, M.D., New York City. Volume VI. Illustrated by Chromo-lithographs and 763 Half-tone and Wood Engravings. Cloth. Pp. 1004. Price, $7.00 per Volume. New York: Wm. Wood & Co. 1903.

As volume after volume of the new edition of this magnificent work appears, one becomes more and more impressed with two facts: one is that since the first edition appeared the progress of medicine in all its departments has been most wonderful; the other is that this work represents the medicine of to-day as the first edition reprevented that of its time. This means that much of the old matter has had to be rewritten, and that not a small part is entirely new. Many of the articles in each volume are on subjects that were not thought of fifteen years ago, and some of these are so full as to make important monographs of themselves. This large amount of new matter has made it necessary to reduce the space occupied by some subjects that were then considered important, but which now are of little interest; and not a few subjects that appeared in the former edition are omitted entirely in the present one. But the editorial rejections, as far as we notice, have been wisely made, and nothing of importance is omitted. In a volume as large as this one, covering so many subjects by so many authors, it might seem easy to find something to criticise; but we find nothing. The selection of men to write on the various subjects has been wisely made, and the amount of space allotted to each subject has been made with a due regard to its importance or otherwise. The work, when completed, if the volumes yet to come are as excellent in every way as those which have already appeared, will be the most important and valuable encyclopedia of medicine in the English, if not in any, language.

Bacteriological Chart in Colors. For Free Distribution. New York: M. J. Breitenbach & Co. 1903.

This chart, 17 by 36 inches in size and intended to hang on the wall, shows in sixty colored plates the various pathogenic organisms. The chart, we presume, is not intended to be scientifically exact and true to nature in every case, but rather to call attention to the general characteristics of the organisms illustrated. There seem to be included some organisms of doubtful etiologic relations, or at least which are not yet generally recognized. Nevertheless, the chart is one that will prove of interest and value to the general practitioner.

Obstetrical Nursing for Nurses and Students. By Henry Enos Tuley, M.D., Louisville, Ky., Professor of Obstetrics, Kentucky University, Medical Department. Cloth. Pp. 202. Price, $1.00 net. Chicago: G. P. Engelhard & Co. 1902.

This is a very practical little work. The author evidently fully appreciated the needs of the obstetric nurse and has given us a book that, in a compact form, fully supplies all the information the ambitious nurse will need. The limitations of the functions of the obstetric nurse are recognized, consequently she is not encouraged to assume the rôle of obstetrician as well as that of nurse.

Microscopy and Bacteriology. A Manual for Students and Practitioners. By P. E. Archinard, A.M., M.D., Demonstrator of Microscopy and Bacteriology, Tulane University of Louisiana, Medical Department. Series Edited by V. C. Pedersen, A.M., M.D., Instructor in Surgery and Assistant Anesthetist at the New York Polyclinic Medical School and Hospital. Illustrated with 74 Engravings. Cloth. Pp. 210. Philadelphia and New York: Lea Brothers & Co.

All that is claimed for this work is that it affords a brief but clear presentation of the essentials, a thorough knowledge of which is necessary as a foundation for a sound superstructure. It is a practical little book.

Medical Organization.

Marshall County (Miss.) Medical Association.

This was organized at Holly Springs, July 30, under the guidance of Dr. K. P. Perkins of Batesville, councilor. Dr. R. H. Peal was elected president and Dr. Robert A. Seale secretary-treasurer.

Franklin County (Iowa) Medical Association.

The officers of this new organization are: President Dr. Charles H. Tidd, Geneva; secretary, Dr. J. Clinton Powers, Hampton; treasurer, Dr. Abraham J. Hobson. Nearly all the practicing physicians of the county are members.

Lafayette County (Miss.) Medical Society.

This was organized at Oxford, July 29, with the assistance of Councilor K. P. Perkins of Batesville. Dr. Wade S. Banks, Abbeville, was made president; Dr. F. Baxter Linder, Oxford, vice-president; Dr. Peter W. Rowland, Oxford, secretary and treasurer.

De Witt County (Tex.) Medical Society.

This was organized July 30, half of the eligible physicians of the county participating. Dr. Joseph M. Reuss, Cuero, was elected president; Dr. Wm. C. Swain, Cuero, vice president; Dr. W. R. Gillett, secretary; and Dr. Oscar J. Mugge, Cuero, treasurer.

Titus County (Tex.) Medical Society.

This society was organized at Mt. Pleasant, Aug. 4, under the direction of Dr. Holman Taylor of Marshall, councilor for

the district. Dr. S. R. Crabtree was elected president, Dr. Thomas S. Grissom, vice-president, and Dr. Walter J. Matthews, secretary.

Madison County (Ohio) Medical Society.

At London, July 31, this society was organized with these officers: Dr. H. S. Quinn, West Jefferson, president; Drs. Wm. H. Christopher, London, and A. J. Welsh, Mt. Sterling, vice-presidents; Dr. Albert Strain, London, secretary and treasurer. Dr. Theodore W. Rankin of Columbus was present and made an address.

Harris County (Tex.) Medical Association.

Under the guidance of Drs. John T. Moore, Galveston; Witten B. Russ, San Antonio, and Walter Shropshire, Yoakum, this association was formed at Houston, July 27. Dr. Edward M. Armstrong was elected president; Dr. James H. Bute, vice-president; Dr. J. Edward Hodges, secretary, and Robert T. Morris, treasurer.

Societies.

Medical Society of the Missouri Valley.—The date of meeting in Omaha has been changed from Sept. 17 to Sept. 14 and 15, 1903.

American Association of Obstetricians and Gynecologists.—This association will hold its sixteenth annual meeting at Chicago, Sept 22 to 24, 1903, under the presidency of Dr. L. H. Dunning, Indianapolis. The Auditorium Hotel Annex has been selected for the headquarters, the management of which should be addressed concerning rooms and rates. Dr. J. B. Murphy, 100 State street, is the chairman of the committee of arrangements, and will gladly furnish any information to members and guests on application. Dr. Murphy may also be addressed relating to accommodations at the Auditorium Annex or other hotels.

Massachusetts Association of Boards of Health.—This association was entertained at Gallops Island, Boston Harbor, at its quarterly meeting, July 30, by the Boston Board of Health. This island is the quarantine station of the port. One paper read was by Dr. B. R. Ricards on the value of disinfectants, a report of his experiments in the Boston Board of Health Laboratory. His evidence goes to prove the great efficiency of carbolic acid and allied cheaper products. Prof. Wm. L. Underwood of Belmont, a lecturer at the Massachusetts Institute of Technology, gave a very interesting lecture with the stereopticon on mosquitoes. He has discovered a big mosquito in the woods of Maine which will devour culex and anopheles and leaves man alone. Until its practical usefulness in this way is demonstrated, however, he commended the use of a pyrethrum smudge, much in the same way it is now used for that purpose in Havana, Cuba.

BRITISH MEDICAL ASSOCIATION.

Seventy-first Annual Meeting, held at Swansea, Wales, July 28 to 31, 1903.

(By Our Special Representative.)

(*Continued from page 463.*)

The President, Dr. Thomas Frederick Griffiths, Swansea, in the Chair.

First General Meeting.

The first general meeting of the members was held Tuesday, July 28, at 2 p. m., in the King's Hall.

The financial statement for the year 1902 was presented, showing a profit for the year of about $2,400.

The first annual representative meeting was held at 3:30 p. m., with Sir Victor Horsley as chairman. Among the reports considered at this meeting was the report of the council which dealt with the imperial vaccination league, the *British Medical Journal*, the superannuation fund, scientific grants committee, the special chloroform committee, the medico-political committee, the vaccination acts, etc.

The president's address was delivered at the Albert Hall at 8 p. m. by President Griffiths, who selected for his subject the following:

The Evolution of Antiseptic Surgery and Its Influence on the Progress and Advancement of Bacteriology and Therapeutics.

Among other things he described the growth of antiseptic surgery. He said the architect has been very rightly called into service to further the practical application of Listerism. This is especially to be noticed in the construction of modern hospitals, and in the addition of new operating theaters to old institutions. They are invaluable in surgical work.

Some thirty-six years ago the mortality from major operations in the London hospitals was about 33 per cent. This high mortality, after major operations, is now reduced to about 3 per cent., and, after minor operations, practically to *nil*, as the outcome of Lister's antiseptic surgery.

BACTERIOLOGY AND IMMUNITY.

The brilliant discoveries of Pasteur and the evolution of antiseptic surgery by Lister gave a great impetus to the study of bacteriology, with the result that new and unexpected discoveries were made as to the part played by bacteria in nature. These micro-organisms have a definite and important place in the scheme of nature. They are distinctly separated by gradation from both the vegetable and animal kingdoms. They form a kingdom of their own which may be termed the "bacterial kingdom." Their very existence appears to be antagonistic to both animal and vegetable life. Their object in nature is evidently one of destruction—the breaking up of complex molecules of animal and vegetable substances into simpler combinations. They are Nature's scavengers, and undoubtedly they are the causal agents of all the communicable diseases to which flesh, and not human flesh alone, is heir.

The varieties of bacteria, differing in size, form, action, character and power for good or evil, are almost endless.

A bacterium may have two states or stages of existence. One is the active or vegetative stage, and the other the spore or resting stage. In the latter state, which may be compared to that of a hard nut or seed, it may remain dormant for a long time until the surroundings favor its development into the active state. This, he showed, has an important bearing on the treatment and etiology of specific diseases.

Pasteur's and Davain's discoveries led up to Koch's investigation. Davain discovered bacteria in the blood of animals suffering from anthrax in 1863, thus confirming the observations made by Pollender in 1849. Koch repeated the experiments and finally established in 1876 the causal relationship of bacteria and disease. Tuberculous disease had been proved by Villemin to be inoculable, and in some countries it had long been believed to be infectious, but it remained to Koch to demonstrate, in 1882, that tuberculous disease was due to the agency of micro-organism. He proved that a bacillus played a part in the production of tuberculosis which is analogous to that which is played by torula cerevisiæ (yeast bacillus) in fermentation. The tubercle bacillus feeds, grows, multiplies and produces its toxin at the expense of the surrounding tissues, very much in the same way as the yeast bacillus feeds, grows, multiplies and produces its toxin (alcohol) at the expense of the saccharin solution in which it is placed. The principle discovered by Pasteur in the processes of fermentation and putrefaction was proved, after years of close investigation by Koch, to be absolutely identical in the development of tuberculous disease in the animal body. He demonstrated the bacillus in the tissue, and cultivated the organism outside the body, and observed the formation of the toxin. The same remark may be applied to diphtheria (diphtherization). Diphtheria bacillus grows, feeds, and multiplies on the mucous membrane and there forms its toxin.

THERAPEUTICS.

Both bacteriology and Listerism have greatly helped to advance our knowledge of the action of medicine. Therapeutics have now been raised in many departments from the plane of empiricism to that of science. Peruvian bark, the active principle of which is quinin, was accidentally discovered to be of great value in the treatment of malarial fever. The discovery was the result of observation, but the knowledge

gained was entirely empirical. Prior to the discovery of the hemameba and the observation of its action on the red blood corpuscles, and until the listerian property of quinin was ascertained, we had no idea how the drug acted as a curative agent. It is now evident that it acts simply as an antiseptic in destroying the malarial parasites which are conveyed to the human body by mosquitoes, and it is now very doubtful whether it has any other beneficial action as a therapeutic agent. The world is greatly indebted to Dr. Manson and to Dr. Ross for their discovery of the part played by mosquitoes in the causation of malarial fever.

Salicin.—Very much the same remarks may be applied to salicin, salicylic acid, and the salicylates, which are powerful antiseptics. The discovery that these drugs were specially valuable in the treatment of rheumatic fever was accidental also. It is now acknowledged that rheumatic fever is due to a micro-organism which probably gains access to the circulation through the tonsils or mucous membrane of the pharynx. Sore throat is a frequent precursor of acute rheumatism. It is probable that scarlatinal sore throat predisposes the patient to infection by rheumatic micro-organisms, over which the salts of salicin have a lethal action.

Mercurial salts are the most efficient antiseptic agents we possess in surgical practice, and it may be argued that the therapeutic action of mercury, when administered internally, is to be accounted for to a great extent by its antiseptic property; hence its specific action on syphilis, which is now stated to be a bacterial disease. It has been recognized for many years that mercury is a valuable remedy in tonsillitis, which is also, no doubt, caused by micro-organisms. Dr. Jamieson of Edinburgh pointed out some years since that mercuric chlorid is most valuable as a bactericide in the treatment of scarlet fever.

Other examples were cited.

SANITATION.

Increased infant mortality and diminished birth-rate are two ugly facts which are not to the credit of our country or of modern civilization. The increased mortality among infants is due to diarrhea and enteritis, and it has been found that the increase due to these two causes is seven times greater in towns than in the country. It has also been found that the mortality from diarrhea is much greater among infants artificially fed than among those which are fed at the breast alone or in part. No doubt much of this increased mortality is due to the ignorance and carelessness of mothers and nurses; but it is also an illustration of a defect in sanitary administration due to the optional character of the acts and regulations. There are in existence model rules and regulations for the cleanly and sanitary conduct of dairy farms, which, though they have been approved and sanctioned by the local government board in England, are not adopted, or, where they have been formally adopted, are not enforced in rural sanitary districts. The medical officers of health of our great cities complain that, owing to the neglect of rural sanitary authorities, the milk supplied for consumption, especially in the poorer quarters of large cities, is often either decomposing or putrescent.

Notwithstanding the defects in the administration of the Public Health Act, the country is often under a debt of gratitude to sanitary authorities and medical officers of health for protecting our shores from the invasions of plague and cholera from time to time. The importation of plague to Glasgow and to the London docks, a couple of years ago, is still fresh in our memories, and physicians have not yet forgotten the feeling of relief experienced when they were assured that the causal agents had been destroyed and that the people had safely escaped a terrible calamity. Great credit is due to the sanitary authorities for their promptitude, energy and determination in the performance of their duty on these occasions. The same may be said of our local authorities generally when an epidemic of smallpox, typhoid fever, or some other infectious disease attacks a populous district. Unfortunately the public is apathetic in these circumstances; it must be hard hit, and many lives must be lost, before it wakes up to realize the situation, and give material help to the medical officer. People are indifferent and accustomed to the endemic and preventable diseases persistently destroying a large percentage of the population. This may be attributed to three causes:

1. The absence of a strong central authority.
2. The ignorance, apathy and prejudices of the smaller authorities.
3. The objections and the loud protestations of faddist and conscientious objectors to vaccination, objectors to the Contagious Diseases Act, objectors to the advancement of medicine by experiments, etc.—a class of persons who, regardless of the consequence to others, claim freedom to do as they please in matters pertaining to health, freedom to do what is unjust and wrong, freedom to endanger the lives of others.

He said it is evident that the reform needed is greater central authority and greater power to county councils over public health administration within their respective areas.

The county councils, urban and rural sanitary authorities should be under compulsion to appoint medical officers of health who should be precluded from private practice and should have power to compel the combination of small sanitary authorities into conjoint areas sufficiently large to secure the services of an efficient medical officer who should give his whole time to public health work. The service should be sufficiently tempting to induce some of the best talent in the profession to enter it. One of the duties of the medical officer should be to deliver popular lectures on sanitary questions and hygiene generally, in his district for the purpose of educating the public on the vital importance of observing the ordinary laws of health.

Infective and Infectious Diseases.

The address in medicine was delivered by Frederick T. Roberts, M.D., B.Sc., F.R.C.P., London, who stated that this subject is one that appeals to the entire profession in all its different branches, and by no means least to the general practitioner.

PRACTICAL ETIOLOGY.

The first question to be determined from the point of view of practical etiology is whether a particular disease is infectious, in the true sense of the term, or not? In the next place, it is very desirable, with regard to each individual infectious disease, to have as definite a knowledge as possible concerning its period of incubation; the degree of infectiousness; and the period of infectivity, that is, how long infection lasts in a particular case? In relation to many of the best known affections belonging to this group, these points have been now established fairly accurately, but there is still much to be done in this direction.

The most important and striking advance which has been made in relation to the practical etiology of infectious diseases is in our knowledge of the sources, modes and channels of infection, both generally and with reference to individual members of the group; of personal predisposing conditions; and of the external circumstances which favor or promote their endemic and epidemic prevalence.

The question of the communicability of certain infectious complaints from person to person through the atmosphere is an extremely important one, especially when a number of individuals are aggregated togther; as well as the distance to which the contagium can be thus conveyed, and the agencies which assist in its dissemination. This question is by no means settled in not a few instances. He referred particularly to typhoid fever and smallpox. While typhus fever has always been regarded as a disease strongly infectious from person to person, typhoid fever has been practically dealt with by the large majority of the profession as being free from danger in this way. Now, however, the tendency undoubtedly is, and probably rightly, to be much more careful as regards enteric from this aspect, and there is a growing objection to the admission of typhoid patients into the ordinary wards of general hospitals. Smallpox is still more important. This complaint is highly infectious through the atmosphere, but how far it can be thus carried, particularly from a smallpox hos-

pital or hospital ship, and the influence of winds in conveying the infective agent, is another matter, and may involve troublesome or even momentous consequences. He had noticed in the medical press recently directly contrary opinions on this question, expressed by those who apparently have had equal experience and opportunities of arriving at a practical conclusion. How far emanations from drains, sewers, defective water closets, and the like can produce so-called "blood poisoning" and other indefinite infective conditions, is another question which needs clearing up.

Passing to the more practical results of modern investigations as to infection, he called special attention to the following facts:

1. As a starting point infective micro-organisms have been found and demonstrated in the blood; in certain secretions; in the excreta, urine as well as feces; in the cutaneous structures or shed epithelium; possibly in the expired air; and in specific lesions, morbid products, and discharges from the body of various kinds. Hence we can readily understand how and why most of the diseases with which these organisms are associated are likely to be transmitted from individual to individual; how the infected materials may contaminate fomites, and be thus conveyed far and wide; how they retain their activity in a dried state for an indefinite period, thus rendering apartments or other places infectious; and how they may be "airborne," being carried about by atmospheric currents or winds, and afterwards either inhaled or swallowed by persons, it may be, far removed from the original source of infection, remote epidemics being thus not uncommonly originated.

2. The communicability of certain grave diseases by the contamination of drinking water in different ways, but especially by admixture of infected excreta, is an established fact the importance and far-reaching consequences of which it is impossible to estimate or realize in any adequate degree. Why such contamination should take place is often obvious enough, but it is rather startling to be told that unsuspected and most inviting "spring water" may be a highly dangerous source of enteric fever.

3. One of the most striking additions in modern times to our knowledge regarding the conveyance of infection is in relation to food. In this connection milk and its products stand out very prominently, not only on account of their frequent contamination by infectious materials, probably mainly from the deliberate addition of tainted water to milk, but also because this valuable food may convey organisms directly from diseased animals by whom it is secreted.

4. The rôle which different animals play in the transmission of infectious diseases to man is another aspect of the subject on which modern observations and researches have thrown remarkable light. The relationship in this respect of such diseases as hydrophobia and glanders has long been recognized. The idea of direct infection through the milk or flesh of infected animals is of comparatively recent date. The danger of infection being carried directly by domestic animals, such as birds, cats and dogs from person to person, or perhaps because they themselves are suffering from certain diseases, is not yet appreciated as it ought to be. The rôle played by such unwelcome "large vermin" as rats and mice in relation to plague and probably some other complaints is now familiar to all. Flies, cockroaches and the smaller but too well-known personal vermin may no doubt be instrumental in conveying infection in certain cases, and flies may thus taint food. But the most remarkable and important revelations which modern investigators have given us as to the transmission of infection by animals are those relating to mosquitoes. The discovery and demonstration of the connection between these minute torturers of humanity and malaria, in which Sir Patrick Manson and Major Ross have taken such a prominent part, has already worked incalculable good, and promises in the future to revolutionize the conditions of life in many parts of the world, to the inestimable advantage of the communities who are native to the district, as well as of Europeans whom circumstances compel to reside there. The same statement applies to yellow fever, and probably to other affections prevailing in climates and localities where mosquitoes abound.

5. The question of the relation of infection to soil, place, and particular houses or groups of houses, is a very important one, but about which there is at present much that is uncertain and indefinite, and that needs to be worked out more fully before any positive conclusions can be arrived at with regard to individual diseases.

6. Another most important aspect of infection, from a practical point of view, is the fact that we are every one of us always carrying about in various parts of our bodies microbes, which while habitually innocuous and non-virulent, may under favoring conditions, so far as they are concerned, become extremely virulent, or possibly specific, to our personal undoing; or we may even be harboring in our mouths, throats, noses, ears and thereabouts specific germs by which, quite unintentionally, we are liable to infect others at any time, while we ourselves go scot free.

7. Lastly, he referred to the progress made in our knowledge of the channels of entrance of microbes into the system, and the modes in which they are disseminated.

TREATMENT.

There are certain special questions bearing on the treatment of infectious diseases which he could not pass over without brief comment.

1. *Hydrotherapy and Allied Methods.*—Dr. James Currie of Liverpool strongly advocated and carried out the treatment of fevers on a considerable scale by baths and douches. This treatment fell into practical desuetude, and, indeed, was generally looked on with aversion and dread. In modern times, however, it has not only been revived, but numerous other methods for applying cold to the body, either generally or locally, have been added, not only by means of water, but also of ice and cold air. These methods are now generally recognized and extensively adopted, probably more on the Continent and in the United States than in this country, even in the treatment of many of the ordinary fevers, but especially in the more severe cases; and the local application of ice is strongly advocated in acute pneumonia and other inflammatory infective diseases. While of great value as antipyretics they have other important beneficial actions. Regarding hydrotherapy and allied measures in the treatment of infectious diseases, every medical practitioner ought to be familiar with them, and be able and ready to carry them out when required. The milder methods, such as sponging the skin or applying ice locally, are easily practiced and are often of the greatest service.

2. *External and Local Treatment.*—The treatment of external or local manifestations of particular infectious diseases, such as scarlatina, smallpox or diphtheria, affords legitimate ground for differences of opinion, and it is often puzzling to determine what is best to be done for such conditions when one reads the different methods of treatment advocated by different experienced authorities. The measures to be adopted must be determined very much by the particular views of the practitioner, guided by judgment and discretion, and modified by the special circumstances of each case. Antiseptics and disinfectants are employed with great advantage as local applications for various purposes. How far the light treatment, the *x*-rays, or particular color rays are going to help us, can not be definitely determined at the present time. Just now the subject has come very prominently before the profession and the public, and the "red-light treatment of smallpox," which, however, is by no means a novelty, so strongly advocated by Professor Finsen is attracting special attention, as well as some adverse criticism. What we may expect, also, from that wonderful, newly-discovered element, radium, it is impossible to foretell, but we must be on our guard against accepting statements as to its marvelous curative effects by irresponsible observers.

3. *Vaccines: Serumtherapy.*—What would, no doubt, be generally regarded as the most vitally interesting and important question of modern times bearing on the prevention and treatment of the entire group of infective diseases, is that of "serumtherapy," using the term as an inclusive one, which has

come as the natural outcome of the microbic theory, and is founded, on the whole, on reliable bacteriologic researches and experiments, supported by the results of practical experience in living subjects.

Evolution of Abdominal Surgery.

The address in surgery was given by A. W. Mayo Robson, F.R.C.S. Leeds, who detailed his observations on the evolution of abdominal surgery from personal reminiscences extending over a third of a century and the performance of 2,000 operations.

The rise and progress of abdominal surgery has centered more around ovariotomy than any other branch of work, hence he reviewed the evolution of that operation, calling it the battlefield of abdominal work.

Under perfected technic and a judicious combination of asepsis and antisepsis, ovariotomy has become one of the most successful major operations in surgery, and has paved the way for other equally great triumphs within the abdomen. It has proved a truly beneficent procedure, and has not only saved thousands on thousands of valuable lives, but has restored to their families sound and healthy very many of the wives and mothers and daughters of nations.

The discovery of the frequency of perforative appendicitis, of perforating gastric ulcer, and of other peritoneal catastrophes is gradually abolishing the term acute peritonitis for the more rational one of acute peritoneal infection, for the treatment of which surgery alone is of any use, and even for it to be of service operation must not be long delayed.

These more rational views of pathology and treatment have originated and developed within recent years, and he could recall case after case, during his student days, in which peritoneal catastrophes ended fatally, where now surgeons should, by timely interference, give a fair chance of life. Could anything show this more definitely than the results of treatment of perforated gastric ulcers, which if operated on at once would would have hardly any mortality, if within 12 hours of rupture have a mortality of 16.6 per cent.; if within 24 hours, 63.6 per cent.; if within 36 hours, 87.5 per cent., and if delayed for 48 hours will only rarely succeed; or to give another example, than the results of surgical treatment of the intestine in typhoid fever, alas too seldom resorted to.

In injuries of the abdomen by penetrating wound, whether stab or bullet wounds, the resulting troubles are from infection, either directly through the instrument causing the injury or by perforation of one of the hollow viscera and escape into the peritoneal cavity of the septic contents; how much more rational it is to consider this as an infection and immediately to set about the removal of the poison and the repair of the damage, if it can be done under conditions favorable to success, than to treat it as peritonitis and rely on so-called antiphlogistic remedies. Few greater triumphs of scientific surgery can be shown than some of the remarkable cases of visceral injury, where stomach, bowel, liver, gall bladder, and other viscera have been perforated, either by bullet or some other sharp instrument, and in which operation has been successfully performed, before infection has had time to occur.

Appendicitis of the acute, perforating, or gangrenous type comes on so suddenly as often to constitute a peritoneal catastrophe, and in a proportion of cases terminates fatally in so rapid a manner that the diagnosis is made only with great difficulty, or not at all. Such cases, when he was a student, went undiagnosed, and death was ascribed to peritonitis simply, a sufficient diagnosis in those days; and it was not till 1886 that anything was heard of this lethal malady, which, though it has slain its tens of thousands, is now, thanks mainly to the labors of Fitz of Boston, who laid the foundation of modern knowledge of the subject, brought under subjection in a very large percentage of cases.

The disease is said to be on the increase, but he is not at all clear as to the truth of this, as there have been buried in literary records for generations, fairly accurate accounts of dangerous inflammations occurring in the right iliac fossa and described vaguely as typhlitis, perityphlitis, paratyphlitis, etc., and both Copland and Burne in 1837 gave accurate descriptions of perforative appendicitis and its consequences.

It is certainly more frequently diagnosed and more scientifically treated than it was, and it is a comfort to know that the operation, when undertaken early, is attended with an encouraging amount of success, and, as shown by Sir Frederick Treves, when treated in the quiescent period it is almost devoid of risk. Arguing from his own experience of operations in the quiescent period in a large number of cases without a death, and from that of many other surgeons at home and abroad, he has no hesitation in saying that had he an attack of appendicitis he should prefer accepting the infinitesimal risk of removal of the organ directly the attack was over to the decided risk of waiting for the next seizure, which might be one of the acute type.

SURGERY OF THE LIVER, STOMACH AND INTESTINES.

After discussing hysterectomy, he turned to the liver and stomach.

The surgery of the liver was until recent years limited to the evacuation of abscesses and hydatids, and it is interesting to note the evolution of the various methods following closely one on the other; of emptying by trocar or aspirator; of opening by caustic or thermo-cautery; of incision *à deux temps;* and, lastly, of the method which we now generally adopt—hepatotomy, or direct incision of the organ after reaching the liver, either through the abdominal parietes, or, if necessary, through the thoracic wall—an operation the credit of which must be given to Lawson Tait.

The surgery of the stomach is still more recent than that of the gall bladder, but unlike gall-bladder work, which was successful from the outset, the way to success in gastric operations has been paved with many failures, and only recently has the surgeon been able to show what can be done in this branch of work.

He is firmly convinced that many deaths are ascribed to cancer when the disease is inflammatory and perfectly curable by the operation of gastroenterostomy without removal of the tumor; this he could prove from his own experience in patients now living and well several years after an operation, which at the time was thought would be only of a palliative nature.

Until quite recently gastric ulcer, except for one or two of its complications, has been considered to be a subject for medical treatment from first to last. The profession is, however, becoming awakened to the fact that it is not the trifling ailment it was once considered to be, and that it should from the first be taken seriously, for it is in the early stages that medical treatment can be employed to the best advantage, and in the later stages that general treatment is so often followed by relapse or by serious complications.

The pancreas had practically received no attention from a surgical point of view up to Senn's classical experimental work in 1886, and even for some time after that the only interest centered around cysts, so that Greig Smith, writing in 1896, said, "The experience of the last ten years has added little to the work of Senn of Chicago." But what do we see to-day? That the subject is of such magnitude as to need a volume of considerable size to adequately deal with its pathology and surgical treatment. He himself has operated on nearly a hundred cases of diseases of the pancreas of various kinds.

Acute pancreatitis is one of the most serious and fatal of diseases, often coming on with startling suddenness, and it is astonishing how it can have escaped the notice of pathologists until so recently. Fortunately surgery has been able to interfere beneficially in some of these cases, especially those ending in suppuration, and as our knowledge of the subject increases we shall be able to do more both in the way of prevention and cure.

The surgery of the intestines provides the most varied and difficult field of work in the abdomen, and as the ordinary methods adopted in general surgery here need modification, the evolution of intestinal surgery has been accompanied by infinite variety in detail.

The interrupted suture at first employed occupied so much time in application that many modifications were soon introduced, and in 1885 Mr. Bishop showed there were no fewer than thirty-three distinct methods of enterorrhaphy, and since probably as many more have been introduced.

In 1887, Senn's plates were employed to facilitate the process of intestinal anastomosis, and he remembered what a great impetus was given to the surgery of the intestinal canal by Dr. Senn's very able paper and demonstration at the International Medical Congress in Copenhagen. In 1892, being dissatisfied with the methods then in vogue, he invented a decalcified bone bobbin shaped like a cotton reel, which would form a temporary splint around which to apply two continuous sutures, one to the serous and another to the mucous margin of the new openings; which method has proved most useful, and he feels sure has ministered to whatever success he has had in this line of work.

The continuous sutures applied over the bone bobbin considerably shortened the time of operation and left the union so safe and secure that in a large number of operations since performed on the hollow viscera, he has continued to employ it with great satisfaction. As illustrating its utility, the series of cases of posterior gastro-enterostomy performed by him up to the end of last year were all done by this method; and, in the four cases that died, the union, as proved by necropsy, was perfect; moreover, he knows that the anastomotic opening has not the tendency to contract that occurs after some of the other methods, and as the bobbin dissolves within two or three days no foreign body remains to cause further trouble. In end-to-end junction of the divided bowel in enterectomy the decalcified bobbin has given him equal satisfaction, and, though from the nature of the cases the actual operative mortality has been greater, yet in no case has the result been due to imperfect coaptation.

In 1892 Dr. Murphy of Chicago invented his well-known metal button, which, since it is employed without previous application of sutures, can be used very quickly, and by its distinguished inventor, as well as in the hands of other surgeons it has been adopted with great success. The two chief disadvantages it presents are, first that it is necessarily associated with sloughing of the compressed and coapted ends of the bowel, next that a foreign body is left in the canal, which sometimes produces ulceration and other troubles, and thirdly that the opening has been found in some cases to contract and necessitate a further operation. Along with many other surgeons he gave it a thorough trial, but soon reverted to the method of suture round a bobbin, and the general trend of opinion is now to rely on simple suturing with or without any mechanical support.

For the rational treatment of intestinal obstruction we owe much, first to the anatomic researches of Sir Frederick Treves, and secondly to his admirable work on the pathology and surgery of the subject.

At the present day the differential diagnosis has been so well worked out, and the technic of operative work so much improved, that no physician or surgeon long delays resorting to operation if relief be not soon obtained, and the results as shown by numerous reports, amply justify the change.

PREGNANCY.

Among the great advances of surgery in the period in question has been the successful treatment of many of the anomalies of pregnancy; for instance, the eminently satisfactory results now obtained in that ancient operation, cesarean section, where at one *séance* two, or sometimes three, lives are saved, and which in the hands of Murdoch, Cameron, Leopold, Sanger, and other operators has been done in recent years with an extremely small mortality, whereas in the large maternity hospitals in Paris during half a century before the aseptic era, although the operation had been done sixty times, in no instance had the mother's life been saved, and in England the operation for similar reasons was condemned absolutely. He knows of no operation that has given greater satisfaction than this one, for the patients are eternally grateful, which is truly the highest reward of the surgeon.

THE SURGERY OF THE KIDNEYS AND URETERS.

The most recent advance in renal surgery has been in the treatment of chronic nephritis or Bright's disease, which was first drawn attention to by Mr. Reginald Harrison, who recommended renal puncture or incision in certain cases of chronic albuminuria, but to Dr. Edebohls of New York must be given the credit of adopting an original operation for the treatment of Bright's disease. He in 1898 deliberately exposed both kidneys, stripped their capsule, and fixed them in position, in a young woman of 26. Frequent examinations during the five years showed in every instance normal conditions, and the patient has recently married and is well. In March of this year Dr. Edebohls reported 51 cases of renal decapsulation, and in 47 of these cases both kidneys were operated on at the same time. Out of this large number, 22 are said to be improving from three to fifteen months after operation.

As yet it is too early to pronounce a definite opinion on the procedure, but it is an undoubted fact that decapsulation does effect some improvement in this serious malady, and it may possibly prove effectual in saving life in those terrible cases where suppression of urine comes on after some trifling operation, such as catheterism, or after a chill, or in scarlatina; just as surgery has effectually stepped in and saved life where suppression was due to obstruction of both ureters. No patient ought to be allowed to die from suppression of urine without the surgical question being considered.

Ureterotomy for stricture and valvular obstruction, leading to hydronephrosis, was an innovation first successfully performed by the late Christian Fenger of Chicago in 1892, and since done by others; for instance, in a case of this kind, where the kidney merely formed a shell over an enormously dilated pelvis, he found the ureter strictured and coming off from the upper part of the dilatation. By dividing the stricture, bringing the edges together transversely, and afterward constricting the large sac by a number of running sutures, the kidney was saved, and has since performed its work satisfactorily.

SEROTHERAPY.

It was hoped that the principle of serumtherapy which has been so eminently successful in the case of diphtheria would also be applicable in the case of bacterial diseases. Unfortunately, however, hopes have not been fulfilled, as not only have the sera thought to be applicable to other diseases failed to do good, but in some cases actual harm has resulted. Nevertheless, the principle is capable of being worked out, and doubtless ere long will be, and he feels sure that it is destined to revolutionize practice in dealing with localized bacterial invasions.

An immense impetus has been given to this line of work by the investigations of Dr. Macfadyean, who, utilizing the discovery of the liquefaction of air made by Professor Dewar, and the intensely low temperature that can be obtained through its employment, has succeeded in grinding up typhoid organisms and liberating the bacterial contents, which can be used as protective vaccines without the danger of introducing living organisms that would tend to intensify and continue the disease.

Of the treatment of streptococcus infection, such as erysipelas and other diffuse inflammations, by the antistreptococcus serum surgeons would probably point to some excellent as well as to other uncertain results; but as improvement in the preparation of the antitoxin occurs, and as their knowledge of when and how to use it is increased, they would be able to calculate on more certain results. At the present time surgeons are finding the injection of the serum of service in immunizing before operating in certain regions, such as the tongue, mouth, throat, and rectum, where asepsis can not be secured with certainty.

In conclusion he said he had tried to show what a close connection exists between the science and art of our profession, and how very necessary it is, if we are to continue our march of progress, that experimental research should not only be untrammeled by factious and unreasoning opposition, but that it should receive greater recognition, encouragement, and support at the hands of the public.

(To be continued.)

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Treatment of Cough.

Pfromm, in *Med. Bul.*, recommends the following combination in the treatment of cough due to an acute bronchitis:

℞. Codeinæ sulph.	gr. 1/16	004
Antimonii et potass. cit.	gr. 1/24	0025
Pulv. opii et ipecac.	gr. 1/12	005
Ext. gentianæ	gr. i	06

M. Ft. capsula No. i. Sig.: One such capsule to be taken every hour until nausea appears; then one every two hours.

The author states that, with this treatment, the cough begins to lose its harshness and the bronchial secretion is increased within thirty-six hours, when the stimulating expectorants should be substituted, such as scilla, ammonium chlorid, ammonium carbonate and terpin hydrate.

In the treatment of chronic bronchitis the derivatives of turpentine are of service. The oils of eucalyptus, santal wood and thyme are also successfully employed in chronic bronchitis. In prolonged and stubborn cases of acute bronchitis the following is valuable in relieving the cough and promoting elimination from the mucous membrane:

℞. Codeinæ sulph.	gr. 1/8	008
Ammon. chloridi	gr. v-x	30-.60
Syr. senegæ	m. xv	1
Syr. scillæ	m. x-xv	65-1.
Syr. pruni virg. q. s. ad	3i	4

M. Sig.: At one dose, to be repeated every two or three hours.

In chronic bronchitis the following is advised by the author:

℞. Codeinæ sulph.	gr. 1/4	015
Olei eucalypti		
Terebeni, ää	m. iii	20

M. Ft. capsula No. i. Sig.: One such capsule to be taken four times a day.

Dyspnea in Chronic Bronchitis.

According to Bruhl, in the *Med. Gaz. of Nantes*, the following combination is of service in the treatment of chronic bronchitis of elderly individuals:

℞. Essentiæ anise	gr. xv	1
Aq. ammoniæ	gr. lxxv	5
Alcoholis (90 per cent.)	3vi	25

M Sig.: Five to six drops in water or syrup three times a day.

Antisepsis of the Mouth.

The following combinations are recommended by Miller in the *N. Y. and Phila. Jour.* as antiseptics for the mouth:

℞. Acidi thymici	gr. iii	20
Acidi benzoici	gr. xlv	3
Essent. menthæ pip.	m. x	65
Tinct. eucalypti	3ivss	18
Alcoholis	℥iii	90

M. Sig.: Put a sufficient amount in the glass of water to render the water milky and use as a mouth wash; or:

℞. Acidi tannici	3iii	12
Menthol	3ii	8
Thymol	gr. xv	1
Tinct. benzoini	3iss	6
Alcoholis	℥iii	90

M. Sig.: Ten drops in half a glass of tepid water.

Ulcer of Stomach.

Gustav Fütterer, in *Northwestern Lancet*, states that round ulcers of the stomach are very difficult to heal as long as anemia is present. Consequently he advises the treatment and correction of the anemia present which may be primary in the form of chlorosis or of a secondary character. He recommends that the juice extracted from four pounds of beef be given daily until the hemoglobin is approximately normal. The patient should be put to bed under the care of a nurse. It is not necessary to resort to rectal feeding when the beef juice is given. As soon as the hemoglobin has reached the proper proportions the beef juice may be omitted and the patient placed on a milk diet and at the end of a month or six weeks the patient may get up and begin taking solid food in small quantities at first. He recommends in some of these cases a solution of silver nitrate, grains five to the ounce, giving a tablespoonful on an empty stomach three times a day.

Variations in the Strength of Digitalis Leaves.

From the observations made by Focke, according to an abstract in *Amer. Med.*, the variations in the strength of digitalis leaves which arise in the drug store are connected regularly with the time of year in which the preparations are sold. The leaves in July and August are, according to Focke, four times as strong as those displaced by them. Until the beginning of October they lose half the strength, until January two-thirds, and until summer three-fourths. He demonstrated the comparative strength of the leaves on animals, observing that poisoning took place more frequently and with smaller doses in the second half of the year. Poisoning occurring in the first half was due to very large doses.

Migraine.

J. R. Clemens, in *Med. News*, highly recommends the use of potassium iodid in the treatment of migraine to the exclusion of all other remedies. He observed that the headache in migraine is very similar to that due to cerebral syphilis, being of a deep-seated, constricted character, with nocturnal exacerbations. He gives it in doses ranging from 5 to 15 grains, three times a day. By this treatment he noticed that the headaches diminished both in frequency and severity.

The following combinations are of value in the treatment of migraine according to Yeo in his *Clin. Ther.*:

℞. Sodii salicylatis	gr. xlv	3
Sacch. lactis	gr. xxx	2

M. Ft. chart, No. vi. Sig.: One powder to be taken every hour at the time of the attack; or:

℞. Caffeinæ citratæ	gr. xv	1
Quin. bisulph.	gr. xxii	1 50
Sacch. albi	gr. xxx	2
Olei menth. pip.	gtt. i	06

M. Ft. chart. No. x. Sig.: One powder to be taken three times a day; or:

℞. Antipyrini	3iss	6
Pot. bromidi	3iv	15
Spts. chloroformi	3ii	8
Aquæ camphoræ q. s.	viii	240

M. Sig.: One large tablespoonful to be taken when the attack comes on and a dessertspoonful night and morning between the attacks.

As an aperient in migraine the following:

℞. Quininæ sulph.	gr. xv-xxx	1-2
Ext. aloes aqueous	gr. lxxv	5
Pulv. ext. glycyrrhizæ q. s.		

M. Ft. pil. No. lx. Sig.: Two pills to be taken night and morning.

Opium Habit.

In an abstract in the *N. Y. and Phila. Med. Jour.* occurs an outline of treatment of the opium habit, as carried out successfully by Dr. E. I. Osgood in breaking up the opium habit among the Chinese. He gave four pills daily of one of the following combinations originated by Drs. Macklin and Beebe:

℞. Quininæ sulph.	gr. ss-2/3	03-.04
Ext. cannabis ind.	gr. ss	03
Ext. nucis vom.	gr. 1/3-ss	02-.03
Sod. phosphatis	gr. 2/3	04

M. Ft. pil. No. i. Sig.: One such pill four times a day; or:

℞. Quininæ sulph.	gr. ii	12
Ext. bellad.	gr. 1/6	01
Ext. nucis vom.	gr. 1/6	01
Ext. cannabis ind.	gr. 1/4	015

M. Ft. pil. No. i. Sig.: One such pill four times a day.

Acne and Rosacea.

Dr. T. G. Lusk, in the *Post-Graduate*, states that the first thing to be considered in the treatment of acne and rosacea is

careful regulation of the diet: The withdrawal of such articles as cake, ice cream, pickles, nuts, oatmeal, pastry, greasy foods, such as goose, pork and duck; fried foods, sausages, salt meats, cabbage, cauliflower, turnips; alcoholic liquors in any form; tea and coffee must be taken in limited quantities. The diet, in other words, must consist of wholesome food, properly prepared and thoroughly masticated and the meals taken at regular intervals. The general hygiene of the patient must be carefully inquired into. The bowels should be properly regulated and tonics of iron, arsenic, strychnin and quinin given internally.

Locally, thick oily skins should receive vigorous treatment with the application of tincture of green soap, after which the following ointment should be applied:

℞. Sodii boratis 3ii 8
Ung. aquæ rosæ .....℥i 30

M. Ft. unguentum. Sig.: Apply locally.

By first scraping the face with a sharp-ringed curette the removal of the blackheads is rendered easier by means of proper instruments.

The following antiseptic and stimulating lotion is of value in relieving the condition:

℞. Zinci sulph.
Potass. sulphuret.
Sulphuris precip., āā.....3i 4
Alcoholis q. s.
Aquæ rosæ q. s. ad .....℥iv 120

M. The zinc and potassium sulphuret are each to be dissolved separately in one half the quantity of rose water and then slowly combined with constant stirring; add a sufficient amount of the alcohol to the sulphur to make a thin paste and add to the solution. Sig.: Shake the bottle, and apply thoroughly to the face twice a day.

The following is weaker and may be substituted for the foregoing:

℞. Sulphuris precip.
Tinct. camphoræ, āā.....3i-3ii 4.-8
Spts. etheris.....3iv 15
Alcoholis q. s. ad.....℥iv 120

M. Ft. lotio. Sig.: To be applied twice daily.

The author prefers lotions to ointments for local purposes.

Deep-seated abscesses must be evacuated by incising with a small bistoury, and after expressing out the contents apply pure carbolic acid on a toothpick, and follow this by an application of the foregoing zinc and sulphur lotion.

For deeply-seated nodules the following is of great value:

℞. Potass. carb.
Sulphuris precip.
Glycerini, āā.....3ii 8

M. Sig.: Apply locally only over the nodules. It should never be used on delicate skins. In most cases the application of this ointment renders incision unnecessary.

In the second stage of acne vulgaris after the lesions have been infected by the finger-nails, Sheffield recommends the following lotion:

℞. Sulphuris precip. 3i-3ii 4.-8
Pulv. camphoræ .....gr. x 65
Pulv. tragacanthæ .....gr. xx 1.30
Alcoholis 3ii 8
Aquæ rosæ .....℥i 30
Aquæ calcis q. s. ad .....℥ii 60

M. Sig.: To be applied externally two hours before retiring and washed off the next morning with hot water.

In the third stage of the disease, when there is a great deal of nodular induration, the following is recommended internally:

℞. Pot. iodidi
Sodii bicarb., āā .....gr. v 30

M. Ft. capsula No. i. Sig.: One such dose once or twice daily until active pustulation occurs, when it should be discontinued.

The lesions in rosacea, according to Lusk, consist of erythema, inflammatory papules and pustules with dilated superficial blood vessels. The inflammation is more diffuse than in acne. The internal treatment of rosacea is practically the same as of acne, except that the mineral acids and bitter tonics are more especially indicated in the former. The zinc and sulphur combination is indicated locally.

In the destruction of the dilated vessels, electrolysis is of greatest benefit. This may be carried out by applying the needle attached to the negative electrode of the battery, and employing a strength of 6 to 10 milliamperes.

Medicolegal.

Liability of Town for Care of Smallpox Patients.—In the case of People vs. Eno and others, brought on the relation of a practicing physician to review the action of a town board on a claim of his, the Fourth Appellate Division of the Supreme Court of New York says that the board of health of the town is a local agency, created by statute for the express purpose of preserving the health of the residents of the town. When so virulent and dangerous a disease as smallpox developed within the limits of its jurisdiction, it was its undoubted duty to take immediate and efficient steps not only to furnish care and attendance to persons afflicted with the disease, but to protect, as far as possible, the residents of the town from the danger to which they were exposed by reason of its contagious and malignant character. To this end it was authorized to incur any reasonable expense, and the expense thus incurred by express direction of the statute became a charge on the town, which was to be audited, levied, collected and paid in the same manner as are other legal charges. It is clear, therefore, the court goes on to say, that, if this physician was employed by the health board, or by any other duly authorized party acting in its behalf, he should be allowed a reasonable sum for the services rendered by him in virtue of such employment. He alleged in his petition that he was thus employed on the 29th day of April by the health officer of the town, and in this he was corroborated by one of the members of the board of health who stated unqualifiedly that the health officer was authorized by the board to employ the physician, and that he did employ him, and gave him the assurance that he would be well paid for his services. There was also further corroboration of this allegation in the affidavit of a third party, who said that the health physician stated to this physician in his presence that the town board of health had authorized the physician to treat and care for all patients who then had or might thereafter be afflicted with the smallpox, and would pay the reasonable value of his services for such care and treatment. But it seems that, on May 7, in order, as he said, that he might have some definite understanding as to his compensation, the physician sent a letter to the health board, informing it that he would be unable to longer continue his services in connection with the smallpox patients without receiving as his compensation therefor the sum of $10 per day, and that on May 9 the town board of health met and passed a resolution employing him at the rate named in his letter. Under these circumstances the court holds that the town board was not justified in rejecting the physician's claim for charges prior to May 9, but, it being practically conceded that his charge for his services was, under all the circumstances, a reasonable one, he should be allowed for the full amount thereof.

Physical Examination Requiring Rupture of Hymen.—The Court of Appeals of Kentucky says, in Louisville Railway Company vs. Hartlege, that, from a review of the cases in which the question of ordering a physical examination of the party seeking to recover for personal injuries has been before it within the last few years, it appears that the weight of authority favors the right of the party sued to demand a physical examination of the party suing. The decisions, however, recognize that the party sued has no absolute right to have an order made to that end, but that a motion therefor is directed to the sound discretion of the court, and that its exercise will be reviewed on appeal, and corrected in case of abuse; that such an examination may be ordered when the

facts can only be brought to light or fully elucidated in that way, and when it can be made without danger to the life or health of the party suing, or without the infliction of severe pain or offending decency. In this case, two physicians made affidavit that the injury to the party by whom the action was brought could not be objectively determined by an examination of her person, except by exploring the vagina and breaking the hymen, which was intact; that her injuries were to be determined by her clinical history and symptoms alone. In another affidavit they stated that a physical examination could not be made without injury to the party, and would cause her pain, and could not be made without the exposure of her person. The substance of the evidence with regard to her injuries, alleged to have been caused by her being thrown against a seat on the floor of a street car, was that she suffered pain in her side and hip from the time of the injury until the trial; that about a week after the injury she was compelled to go to bed on account of the same, and there remained for two weeks or more, under the treatment of a physician; that previous to her injury she had been in perfect health; that from and after the time she received her injuries to the time of the trial her menstruation periods had been prolonged from two to four or five days, which detained her from her work; that the flow was much greater and painful; and that she had not been troubled with it prior to the injury. Other lady witnesses corroborated her in these statements. The two physicians referred to, as well as two surgeons representing the company, were present, and heard all the testimony with reference to her injuries, and the probable effects therefrom. They testified—the two for her from their examination, and from the clinical history of the case as detailed by the witnesses—that this trouble with her menstruation was probably caused by the injuries received. The other two said that it could not have been so caused or produced. The court says that the record disclosed the fact that the extent of her injuries were substantially disclosed by the means used, and that the drastic measures demanded by the company were unnecessary to that end. The small verdict in this case ($500) was one evidence of that fact. And the court declares that it does not feel authorized, nor does it deem it proper, to reverse the case and order another trial, and have the party's person exposed, suffering humiliation and the loss of the evidence of her virginity, to relieve the company of so small a verdict obtained under the circumstances shown in this record.

Employment of Physician on Board—Duty of Chairman.—The Supreme Court of Minnesota holds, appeal of board of health of village of Buffalo Lake, that a town or village board of health, formed under the provisions of the general statutes, one of whose members is a practicing physician and surgeon, may employ such physician to act for the board in all matters requiring such services. It says that the law requires that one member of every board of health shall be a practicing physician and surgeon, and this requirement was not without purpose. The object of the legislature in incorporating this provision into the law is obvious. It was clearly for the purpose of providing the board with a person competent to treat diseases of a contagious character, and there can be no doubt that it contemplated his employment in all cases where professional services of the kind are necessary. If this were not so the provision requiring a physician to be on the board would be of no purpose or effect. The general rule which prohibits a member of a board or council from employing or contracting with one of the members thereof does not therefore apply. Besides, whether the physician employed by a board of health, under such circumstances as here involved, where the chairman of the board was a physician and was employed by the board to render professional services to smallpox patients under quarantine, is to be compensated for his services from the public treasury, and to what extent, is a question to be determined by the county board of county commissioners, and the local board has no voice or power to act in that behalf. Hence one of the strongest and the principal reason for the prohibitory rule in such cases is absent. But the chairman of a town or village board of health is authorized by Chapter 238, page 378, of the general laws of Minnesota of 1901, in his official name and capacity to present an itemized statement of all expenses incurred by the board in the matter of quarantining persons affected with contagious diseases to the board of county commissioners for allowance, and to conduct all proceedings to enforce payment of the same. When an appeal is taken from the action of the county commissioners to the district court, judgment, the Supreme Court holds, may be awarded in his name as such official, and in cases where the county board disallows the claim, and judgment is obtained in the district court against the county, he must necessarily act as a disbursing officer. Nor does the court consider the situation in any way changed in this case by the fact that the village in which the smallpox patients referred to were quarantined, though under no legal obligation to do so, voluntarily paid to the various persons entitled thereto the amounts due them according to the statement of the chairman of the board of health, it not appearing that such payment was made or received in discharge of the indebtedness. In other words, the court holds that its action in that respect did not release the county. If by such payment the village became entitled to reimbursement, the recovery by and in the name of the chairman of the board of health placed him, as to the judgment or proceeds collected therefrom, in the position of a trustee, and he might be compelled to account to it. The expenses involved in this action having been incurred by the village board of health, in quarantining certain smallpox patients, partly prior and partly subsequent to the passage of the statute above mentioned, the court holds that, under the provisions of that statute, the whole expense was a proper charge against the county. It says that the expense incurred in controlling contagious diseases and preventing their spread among the people is one of a public nature, and properly made, in cases where the persons infected with such disease are paupers and dependent on charity for support, a public charge. The mere fact that the legislature saw fit and proper to shift the burden from the town, village or city to the county would not warrant a division of the expenses incurred, in a continuing case, partly before and partly subsequent to such change in the law.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

New York Medical Journal.

August 8.

1 *The Influence of the Roentgen Ray on Sarcoma: Further Observations. William Coley.
2 *Influence of Altitude on Heart Disease: Some Further Remarks and Queries. Robert H. Babcock.
3 *The Psychical Relations of Tuberculosis in Fact and Fiction. (Concluded.) G. A. De Santos Saxe.
4 *The Cause and Specific Treatment of Hay Fever: A Preliminary Report on the Uses of the Toxins and Antitoxins of Professor Dunbar. Emil Mayer.
4½ Malta Fever. C. F. Mason.
5 *Peripheral Palsies Following Manual Replacements of the Congenitally Dislocated Hip. Henry L. Taylor.
6 Rheumatism and Typhoid in Childhood. J. R. Clemens.

1. **Sarcoma and the X-Ray.**—Coley has treated altogether some 30 cases of non-operable sarcoma, which he analyzes, and some of which he reports. He thinks the influence of the *x*-ray is much more marked on this class of malignant tumors than in carcinoma. From personal experience and study of the literature, he does not believe we are justified in using the method in any save inoperable cases. An exception to this rule might possibly be made in sarcoma of the extremity where amputation was the alternative. He believes that in such cases a brief course of the combined *x*-ray and toxin treatment might be justifiable. We have proven thus far that the *x*-rays have a decided inhibitory action on the various forms of sarcoma; in some cases sufficient to cause their entire disappearance, but there is a strong tendency, nevertheless, to local or general recurrence and not enough time has elapsed to warrant a complete cure. Good results can not be expected without prolonged treatment.

2. Altitude and Heart Disease.—Babcock reports some peculiar and rather contradictory cases of effects of altitude on cardiac patients, and he asks if we are to seek the explanation of the ability of one patient and the inability of another to endure altitude in the conditions of the blood pressure, or shall we conclude with Regnard that anyone can reside at an altitude of a mile or so after he has become acclimated. He thinks if Colorado physicians would make it a rule to record the blood pressure in newcomers, especially in those showing signs of cardiac dangers, and compare them with the blood pressure of the same persons after accustomation to the altitude, the results would be of value. Consumptives have generally a low tension pulse and yet most of them are able to bear residence in Colorado without serious cardiac embarrassment. He suggests it as his growing belief that if a cardiopath will remain inactive at a high altitude until he is accustomed to the change, he can visit the mountains with impunity. The dangers of travel and residence at high altitudes seem to be greater with the normal individual, who is likely to overdo. The heart becomes more easily overtaxed.

3. **Tuberculosis.**—Saxe's article is concluded in this issue. He discusses the effects of tuberculosis on insanity and quotes from Fanoni as to the criminal tendencies of the consumptives. His summary and conclusions are given as follows:

1. The consumptive exhibits in the average case, traits of mind and of temperament that have been made use of by some of the best writers of fiction in describing the characters of tuberculous persons—traits that are well worth studying, inasmuch as they are directly connected with the disease, although not specifically characteristic of tuberculosis.
2. The psychical and temperamental traits of the average consumptive have not been studied by medical men with the attention which they deserve.
3. The only probable theory thus far advanced as to the causes of the mental and moral degeneration of the consumptive, leading even to criminal tendencies, is that of toxic poisoning of the central nervous system by the products of the tubercle bacillus, resulting in neurasthenia, psychasthenia, hysteria and insanity.
4. The fundamental factors in the psychical make-up of the typical consumptive are the loss of self-control, the rise of brute selfishness, the increase of susceptibility to suggestion, to emotion and to nervous irritation, and the tendency to rapid, nervous and psychical fatigue.
5. There is no tangible proof that the sexual functions are exalted in tuberculosis, but in all probability the sexual irritability is raised in the early stages of the disease and lowered coincidently with the lowering of vitality in the later stages.
6. In all probability there is a connection between tuberculosis and insanity, the tuberculous toxin contributing, with other factors, in persons rendered susceptible by psychical and somatic degeneration, to the derangement of the mind. Any form of insanity may be found in tuberculous persons, and the term "tuberculous insanity" should not be used to designate a type of insanity peculiar to tuberculosis.
7. The criminal tendencies of consumptives have been observed with sufficient frequency to justify an investigation into the medico-legal question of restricting the responsibility of a criminal on the ground that he is tuberculous. Mental and physical degeneration, together with the tuberculous intoxication already referred to, are the chief factors in the make-up of the tuberculous criminal.
8. The euthanasia of consumptives, which has excited speculation, is to be explained on purely physical grounds, the changes in the nervous system being so marked at the time of approaching dissolution as to efface the patient's suffering and render his death easy.

4. **Hay Fever.**—May has experimented with Dunbar's antitoxin and finds it effective on the spring form of hay fever in this country, as well as in Germany. He thinks that the conclusion of Dunbar that spring hay fever is due to the pollen of grasses is supported, and reports his suggestion that the autumnal cases will possibly find a toxin to which they will also respond.

5. **Congenital Hip Dislocation Paralysis.**—Taylor has observed several cases of paralysis of the quadriceps following reposition of congenital hip dislocation, an observation which has also been made by Lorenz. This condition is easily overlooked, and he thinks that possibly it is more common than has been estimated. The prognosis is generally good. Certain forms of peroneal and sciatic palsies, however, of which he has observed cases, may cause more or less trouble. He thinks that the manipulation of reposition should be deliberate and careful, and when serious obstacles to reposition exist, manual force alone should be abandoned.

Boston Medical and Surgical Journal.

August 6.

7 *The Sources, Favoring Conditions and Prophylaxis of Malaria in Temperate Climates, with Special Reference to Massachusetts. (Concluded.) Theobald Smith.
8 The Element of Torsion in Lateral Curvature of the Spine; Its Place in the Cause and Treatment. Robert W. Lovett.
9 A Criticism of Klemperer's Work on the Condition of Uric Acid in the Urine. Francis H. McCrudden.

7. **Malaria.**—Smith concludes the subject, which was discussed in two previous numbers, with the following summary:

1. There is no evidence that any but the tertian form of malarial fever can be propagated in Massachusetts.
2. The original source of tertian infection must be looked for in the blood of individuals coming from permanently infected localities in our own country and in southern Europe.
3. There is no definite information as to the stage of disease or relative immunity in which mosquitoes may become infected, but analogy with similar diseases of animal life indicate that the gametes are not formed early in the disease, and that relatively immune persons are the most dangerous, especially after fresh exposure, because in them gametes form very promptly without causing much or any clinical disturbance.
4. The dissemination of infection is most easily promoted in our latitude when people live in a crowded condition, unprotected from mosquitoes and near breeding places of anopheles.
5. The decline and disappearance of malaria after importation and epidemic prevalence is in part due to relative isolation of the inhabitants and protection by quinin and from mosquitoes, and in part to the absence of persons partially immunized by long exposure in endemic localities.
6. There is some evidence that sewage pollution in surface waters favors mosquito larvæ directly, through increase in food supply; indirectly, by injuring their enemies.
7. Since malaria may be latent and, hence, unrecognized, and since it is largely a disease of the lower classes, whose movements it is difficult to control, the best method of reaching it is to suppress the mosquitoes whenever possible.
8. Malaria is of sufficient importance to become a notifiable disease.
9. Infants and children exposed should have their blood examined during any disturbance of health.
10. In times of epidemic malaria it may become necessary to make special regulations governing infected persons.
11. It is of great importance that the relation of the widely distributed species, *A. punctipennis,* to the parasite of tertian fever be accurately determined.
12. It is also highly desirable to test the infecting power of fresh cases of tertian fever as compared with relapses and with individuals from malarial countries.

Medical News, New York.

August 8.

10 *Acute Non-suppurative Encephalitis; with Report of a Case. Harlow Brooks.
11 *The Form of the Ureter. Byron Robinson.
12 *A Simple and Rapid Chromatin Stain for the Malarial Parasite. Francis C. Wood.
13 *The Choice of Technic in Operating on Prostatic Obstruction. Charles H. Chetwood.
14 Resection of the Left Pelvis for Osteosarcoma. M. Stamm.
15 The Palliative Treatment of Fibroid Tumors of the Uterus. Augustin H. Goelet.

10. **Acute Non-Suppurative Encephalitis.**—The case here reported by Brooks was one of a girl 19 years of age, without prior bad habits or bad personal or family history, except excessive tea drinking and possibly drug taking for headaches. The postmortem is detailed. There was reflex cerebrospinal meningitis, probably secondary to cerebritis and of the cellular type, as described by Delafield and Prudden. There was also a general non-septic cerebritis of all parts of the cerebrum, most marked in the cortical and motor region with resulting degeneration of the nerve fibers extending into the spinal cord and through the internal capsule, which have their origin in the involved portions of the cortex. There was also an inflammation of the cerebellar tissues in a less marked degree, and slight, probably secondary degeneration of the ganglion cells of the anterior horns. As to the origin of the disease nothing is explained, but he thinks the cause was not infectious. The best way to explain it, he thinks, is by toxins which may have been of bacterial origin, since such conditions are found to follow influenza, but it may have been due to metabolic origin or to the toxic action of drugs. The patient had been in the habit of taking headache powders, and it is possible that these might have caused the disorder, though he does not know of these symptoms being produced by such drugs. The symptoms are such that the cases are probably sometimes misunderstood or credited to hysteria.

11. **The Form of the Ureter.**—Robinson illustrates the various types of ureters, showing the swellings and contractions, which he calls pelvic spindles and isthmuses. Of these the right lumbar spindle is generally larger in women than in men.

12. **Malaria.**—Wood has found the method described below especially valuable in the staining of fresh specimens for the malaria organism:

Fix the preparation for one minute in strong methyl alcohol, wash off in water and stain the slide for a few seconds with a 0.1 per cent. aqueous solution of yellowish eosin. The surplus of the eosin solution should be poured off and a few drops of a 0.2 per cent. solution of methylene azure poured over the slide. The staining will be complete in from one-half to one minute and the slide may be washed with distilled or tap water and dried with blotting paper. . . .

A longer treatment with the azure solution produces a deeper chromatin stain, a shorter treatment produces a stain of less intensity. If a stain of any particular depth is required the whole process may be easily observed under the microscope, selecting a group of leucocytes as a guide. The stain will be seen to gradually color the nuclei of the polynuclears a deep red, and at the proper point the neutrophile granules will be easily visible with a good four mm. dry lens. At the same time the nuclei of the large and small lymphocytes assume a deep red color and the cell bodies of the large forms color a pale blue, while the bodies of the small cells will be a deep blue. At this stage of the process the malarial parasite is of a pale blue color, with deeply red chromatin granules. If the methylene azure has remained in contact with the smear but a short time the red cells will be of a bright pink color, but if the staining is prolonged the red cells become bluish or greenish in color. After prolonged staining with the azure the color of the neutrophile granules generally fades and the bright pink of the eosinophiles is replaced by a bluish tint. For general purposes, therefore, it is best not to stain the slide too long with the methylene azure. . . .

Beginners may mistake the blood plates, which often lie in depressions in the red cells, for malarial parasites, especially as they stain red with the chromatin dyes. The distinction must be made by the differences in morphology. The blood plate is not sharply outlined and the nuclear substance is in the form of an indistinct mass not surrounded by a clear zone, while the small ring form of the malarial parasite is very sharp in its outline, as is also the chromatic substance, the latter being surrounded by a clear zone and beyond this by the blue ring of the body of the parasite.

He has also been able to make good stains on old slides with this eosin and methylene-blue mixture.

13. Prostatic **Obstruction.**—Chetwood, from his experience in 45 cases, concludes that prostatotomy is less dangerous than prostatectomy. It is the operation of choice in a large number of cases of obstruction, notably those of moderate glandular enlargement or orificial hypertrophy and contracture in which the prime object is removal of the obstruction and depression of the bladder orifice. He also finds that galvano-caustic incisions when combined with perineal cystotomy accomplish satisfactorily the desired result, shorten the operation and minimize the dangers.

American Medicine, Philadelphia.

August 8.

16 *Acute Articular Rheumatism. Thomas McCrae.
17 *Beri-beri or a Disease Closely Resembling It Met in Chinese Fishermen Returning to San Francisco from Alaska. Donald H. Currie.
18 Emotions as Symptoms. Henry S. Upson.
19 Osteitis Deformans; Report of a Case. H. J. Sommer, Jr.
20 An Interesting Case of Pigmentary Degeneration of the Retina (Retinitis Pigmentosa). Walter L. Pyle.
21 The Education of the Young in Sexual Matters: A Lesson in Defeating Quackery. A. Robin.
22 The Ill Health of Jane Welsh Carlyle. George M. Gould.

16. Acute **Rheumatism.**—McCrae reports and analyzes the experience at the Johns Hopkins Hospital during the past year, covering some thirty-seven cases in forty admissions. The chief points noted are the severer type of the disease observed over that of previous experience, the greater proportion of cardiac complications, the long duration of the disease and the mortality. The cultures that were taken were practically negative throughout; the series, therefore, throw no light on the bacterial cause of the disorder. Of the 37 cases, 4 died in the hospital, or 11 per cent., against three deaths out of a total of 270 cases previously treated. The author remarks that the experience of these cases shows that acute rheumatism can kill as well as cripple, and he questions whether the former would not sometimes be the more merciful.

17. Beri-Beri.—Currie reports nine cases of what appeared to be beri-beri occurring in Chinamen employed in the Alaskan canning establishments. Four of the nine cases died. He thinks probably 4 per cent. of the Chinamen thus employed were attacked. The vessels which carried them back and forth did no other trading, and, therefore, did not enter into any known beri-beri zone. The cases, therefore, seem indigenous.

Medical Record, New York.

August 8.

23 *Some Comparative Examinations of Breast Milk and Cow's Milk and the Effect of the Addition of Alkalies and Other Antacids to Cow's Milk. Charles Gilmore Kerley, Albert H. Gieschen and George T. Myers.
24 *The Influence of Heredity on the Eye. John E. Weeks.
25 *Treatment of Trachoma. J. Herbert Claiborne.
26 *Electricity in the Treatment of Diseases of the Stomach. E. G. Marshall.
27 *A Contribution to the Study of the Intercostal Phonation Phenomenon and the Litten Diaphragm Phenomenon. Albert Abrams.
28 *Some Dangers of the Hot-Water Bottle as Applied to the Newborn. Douglas H. Stewart.
29 *Artificial Fluorescence of Living Human Tissue. William James Morton.

23. **Milk Examinations.**—Kerley, Gieschen and Myers conclude their article with the following conclusions:

1. Breast milk and cow's milk are both acid.
2. The litmus paper test for milk is unreliable because of the variation in the quality of litmus paper, and the litmus taking part in the reaction and not acting as an indicator.
3. The effect of adding lime water or bicarbonate of sodium to feedings is to retard or inhibit the formation of curds by rennet.
4. The teaching that lime water, bicarbonate of sodium, or carbonate of potassium should be added to fresh milk or feedings simply because they are antacids is erroneous.
5. The addition to milk or feedings of alkalies or salts that become alkaline in solution is an empirical method of aiding digestion by preventing the formation of dense curds that would slowly leave the stomach and be difficult of digestion in the intestine.

24. **Heredity in Eye Diseases.**—Weeks notices the various forms of eye trouble which may be influenced by heredity, including congenital conditions, such as polycoria, epicanthus, coloboma of the iris, aniridia, coloboma of the choroid, albinism, malformation of the globe, cataract, optic nerve atrophy, retinitis pigmentosa, glaucoma, color blindness, etc. He remarks that the most common causes of eye disease are heredity and syphilis, and enumerates a number of conditions of this latter type.

25. **Trachoma.**—The treatment of trachoma is summed up by Claiborne as medicinal or surgical or a combination of the two. In the non-inflammatory forms characterized by frog-spawn granulations, the operation is expression alone with appropriate after-treatment as indicated. The best instrument, in his opinion, is the Knapp roller forceps or some modification. In the inflammatory form the operation of expression followed by a mild astringent and finally by a copper stick, is indicated as long as granules exist in a reasonable quantity. When the disease has passed the granular and is in the cicatricial stage, copper sulphate alone or in combination is indicated.

26. **Intragastric Electrization.**—Marshall describes his experience with the Einhorn method of intragastric electrization, which he says should not be resorted to except where medicinal and dietetic treatment has failed, but in such cases it will be found of inestimable value.

27. **Intercostal Phonation Phenomenon and the Litten Shadow.**—These phenomena are described by Abrams. The first consists of a distinct elevation of the intracostal space when short words or syllables are uttered by the patient. It is best seen, naturally, in lean individuals, and is best elicited if during phonation the patient closes his nostrils and places the other hand over his mouth so as to partially obstruct the exit of air. Its value is in differentiating lung infiltrations from accumulations in the pleural cavity, but it is not infallible here, as it can not be used in obese patients, when the exudate is compressing the lung, or when pleural thickening and adhesions exist. The Litten shadow is the method of discovering the diaphragm movements. The patient is placed with head and shoulders toward the light, lying on his back, with feet directed toward a window and chest exposed. Cross lights should be eliminated. It can also be shown with a strong light held at the foot of the bed, excluding other lights. The observer stands at the side a few feet from the patient, with his back to the light and observes the lower chest at an angle of 45 degrees. The patient is directed to take deep breaths, and as the ribs rise with each inspiration a short, narrow shadow moves along the axilla from about the seventh to the tenth rib. This is less evident during expiration, and cuts the ribs at an oblique angle. It is best seen in lean individuals of both sexes and is never absent in health, excepting in very fat individuals or those who can not take deep breaths. It permits us to say that in that particular chest region the

diaphragm and lung lie in contact with the thoracic wall and both are freely movable. Its absence would suggest an opposite condition of things, adhesions, emphysema and whatever would displace or make irregular the shadow. He gives a synoptic table of the phrenic shadows in the various conditions where it is diminished, absent or increased. He has tried to exaggerate it by various means and finds if the skin is colored yellow over the area it is much intensified. If nothing else is at hand the use of yellow vaselin will suffice.

28. **Hot-Water Applications to the New-Born.**—Stewart calls attention to the dangers of burning feeble children with hot-water bags, and this accident is not as uncommon as it ought to be. It may frequently be overlooked by the physician, especially if located on the back. He says if the reader will examine every new-born child on the third, sixth and seventh day after birth he will become just as timid as is the writer, and as watchful to see that there is a thick folded blanket above every hot-water bag and a thick folded towel under every ice bag.

29. **Human Tissue Fluorescence.**—Morton finds that administering quinin renders the tissues fluorescent and suggests that it might possibly be of value in cancer cases. Acting on this idea he has, during the last year, been in the habit of administering from 5 to 10 gr. or more of quinin bisulphate about one hour before *x*-ray treatment. While he can not positively affirm it, he believes that the cases thus treated by the combination of fluorescing medicines and the *x*-ray have made more improvement and more certain recoveries than patients not thus treated. He thinks this method, which he calls the *x*-ray histofluorescence, is worthy of trial. He has also used it in some other forms of disease, such as chronic malaria, Hodgkin's disease, lupus, tuberculosis and tuberculous deposits. He has shown the existence of this fluorescence by photographs of portions of the human body treated with quinin either applied locally or hypodermically in a dark room by its own light.

Cincinnati Lancet-Clinic.

August 1.

30 Medical Organization. Brooks F. Beebe.
31 The Use of Sodium Chloride and Oxygen Gas. Brose S. Horne.
32 Surgery of Prostate, Pancreas, Diaphragm, Spleen and Thyroid. (Continued.) B. Merrill Ricketts.

August 8.

33 The Chemical Analysis of the Gastric Secretions. Clement C. Fihe.
34 Cancer of the Rectum: Report of a Case. George J. Monroe.
35 Surgery of the Prostate, Pancreas, Diaphragm, Spleen and Thyroid. (Continued.) B. Merrill Ricketts.

St. Louis Medical Review.

August 1.

36 Privileged Communications Between Physician and Patient. L. O. Hocker.

August 8.

37 Pelvimetry by Means of Graphic Reproduction of the Pelvic Canal in the Living Woman. Hugo Ehrenfest.

Brooklyn Medical Journal.

July.

38 Gastric Hemorrhage. Jacob Fuhs.
39 *Hematemesis Following Appendicectomy, with the Report of a Case and Presentation of Specimen and Slides. George R. Fowler.
40 *Tubal Pregnancy, Clinically Considered, with a Plan for Its Early Recognition and Radical Treatment. Walter B. Chase.
41 *The Skin as a Source of Wound Infection. George R. Fowler.
42 A Few Remarks on Some Everyday Ear Cases. J. E. Sheppard.
43 Teratoma of the Ear. William C. Braislin.

39. **Hematemesis Following Appendicectomy.**—Fowler reports a case of fatal hematemesis in an otherwise apparently healthy individual after appendicectomy. Minute ulcerations were found in the stomach, mainly on the lesser curvature. The processes were apparently quite recent, as shown by microscopic examinations, and he thinks that the multiple foci had their origin without doubt in the gangrenous appendix. The toxicity of the appendiceal lesion is responsible for the fatal issue in such cases. The question is whether the emboli bearing staphylococci pass through the pulmonary circulation, and finally find lodgment in the vessels of the gastric mucosa or whether the staphylococci alone were transported to and produced thrombi with subsequent embolism in the vessels. The latter view is sustained by two facts: In one section there was a focus of necrotic tissue containing staphylococci, and the vessels of the submucosa near this area contain recent thrombi, and in another section an exquisite embolus was seen involving a vessel in the mucosa near its bifurcation, the vessel and its two branches containing recent blood clot.

40. **Tubal Pregnancy.**—Chase emphasizes the importance of the practitioner examining a woman liable to pregnancy, bearing in mind the possibility of this condition. In case it occurs and rupture has not taken place the sooner the pregnant tube can be recognized and removed the better. In the cases in which the condition points to recent rupture of the intraperitoneal variety and evidences of hemorrhage are present, immediate operation should be done. It is criminal to leave a woman to chance in such cases. If evidence is present that the rupture is extraperitoneal—into the broad ligament—and the resulting hematoma is moderate in size, waiting for developments may be justified, as nature may possibly take care of the mass. Finally, while it will continue to happen that ectopic pregnancy will show a frightful mortality where no accurate diagnosis has not been made until too late, it is true that with a proper appreciation of the grounds, on which at least a presumptive diagnosis can be made by the practitioner, an increasing number of lives can be saved.

41. **Skin Infection.**—Fowler insists on the importance of skin infection, and gives his own methods. He trims his finger nails as closely as possible consistent with their aid in the tactile sense, and then washes with tincture of green soap and warm water. The spaces between the nails are then scraped with a blunt instrument to loosen the dirt beneath the nails, which has been previously softened by the washing, following this with a special nail brush, consisting of small wire brush stretched in a frame, such as are sold in lengths as smoking pipe cleaners. Then follows the ordinary hand brush properly sterilized, scrubbing the palms, ends of the fingers, including the entire nail. The backs of hands, where eczematous conditions are apt to arise, and the arms as well are cleansed with a folded square of gauze used as a wash cloth. Lukewarm running water is used. All traces of soap are now washed off with a lukewarn 1 to 2,000 mercuric chlorid solution, after which an alcoholic solution of the same strength is used. With the aid of gauze the alcohol is rubbed in and about the matrix of each nail separately. If the hands have been recently exposed to any special infection, such as a pus case, additional precautions must be taken. They should be thoroughly and deeply stained with permanganate and corrosive sublimate solution. A two minutes' immersion is sufficient to stain the hands deeply, after which he decolorizes in a hot saturated solution of oxalic acid. The addition of half an ounce of strong ammonia water to a quart of sterile water makes a solution which will neutralize the acid, after which the ammonia solution is washed off in the bichlorid solution. The hands are again stained in potassium permanganate and mercuric chlorid solution and this stain permitted to remain. During the operation it is of utmost importance, he says, to dip the hands at least every five minutes in cold solution of sublimate. In septic cases bleaching in oxalic acid before the operation is omitted, the hands being simply protected by deeply staining them with permanganate and sublimate solution and permitting this to remain during the operation. This course is also followed in clean cases when the hands have not been recently exposed to a special infection. The stain serves the purpose of preventing the passage of micro-organisms from the depths of the skin of the hands to the surface. The principal points are summarized as follows: 1. The necessity of cleansing the surface and all accessible harboring places for dirt. 2. The necessity for avoiding irritations to the skin of every description and removing those influences which relax its structure and favor the migration of micro-organisms. 3. The protection of the hands from micro-organisms which give rise to suppuration. 4. Frequent disinfection of the surface of the hands during operation. Fowler has little faith in rubber gloves or impermeable applications to the hands.

American Journal of Obstetrics, New York.

July.

44 *Diagnosis and Treatment of Medium Degrees of Pelvic Deformity. J. M. Munro Kerr.
45 *Accouchement Forcé. Robert L. Dickinson.
46 *Abdominal and Vaginal Cesarean Section as Means of Accomplishing Accouchement Forcé. J. Clarence Webster.
47 *Cervical Incisions in Labor. Rudolph W. Holmes.
48 *The Bossi Dilator; Its Place in Accouchement Forcé. J. B. De Lee.
49 *The Effects of the Toxemia of Pregnancy on the Cardiovascular System. Richard C. Norris.
50 A Report of the Major Operations Performed on the Service of Dr. H. D. Nichol, at the Woman's Hospital in the State of New York, from February, 1901, to June, 1902, with Remarks on the Technic Employed. Dougal Bissell.
51 Report of a Case of Tubercular Pyelonephritis, Ureteritis and Cystitis, Weight of Kidney After Removal 18½ Ounces. W. L. Burrage.
52 *Objections to the Vaginal Route in the Treatment of Ectopic Gestation. J. Wesley Bovée.
53 *Concerning the Nature of the Small Cysts Frequently Found in the Peritoneum Covering the Fallopian Tubes. Thomas G. Dickson.
54 Report of a Case of Cyst of the Round Ligament. A. Brothers.
55 *Placenta Previa. John F. Moran.
56 A Plea for the Better Care of Women After Labor. William M. Sprigge.

44. **Pelvic Deformity.**—Kerr reviews the methods of examining for pelvic deformity, giving his own. In certain cases where the difference in size between the head and pelvis is only slight, a decision should be come to only after watching the progress of the labor, especially in primiparæ. What he calls medium degrees of pelvic deformity are "those cases where the C. V. is round about three inches and there are several alternative treatments, forceps, version, induction of premature labor, symphysiotomy and occasionally cesarean section or craniotomy." The factors that should guide us in the decision are: The stage in which the case is seen, whether during pregnancy or after the commencement of labor, the general condition of the mother, the presence or absence of complications, nature of the presentation, and the possibility of rectifying it if abnormal, the condition of the fetal head, the presence or absence of any complications such as malformations, prolapse of the cord or a plural pregnancy. He has never seen a spontaneous birth occur with a C. V. below 3½ inches. Symphysiotomy should be employed only in judiciously chosen cases, though justifiable in such, and is contraindicated in overlapping of the head at the symphysis more than of the slightest degree. With a vera below 3 inches it becomes a last resort, and 2¾ inches is the lowest limit. With 3 inches, however, a good result can be obtained unless the head is too large. With 3¼ inches he would always try forceps first. He thinks the operation should not be performed in persistent breech presentation, and if the fetal heart beat is unsatisfactory. The induction of premature labor would be an ideal operation if the patient were seen early enough in pregnancy, which is not always possible. If we can be sure of the age, it is undesirable to induce before the thirty-fourth week. Craniotomy is justifiable if the child is dead or the fetal heart is feeble and if the patient has been in labor long before coming under care, and there is a probability of her being already infected; even if the child is alive, he thinks craniotomy is the only alternative if one fails to deliver with forceps. It is absurd to say that it is a crime to perforate a living child. It is occasionally quite sound treatment.

45. **Accouchement Force.**—While every case should be studied by itself, the choice of a method where delivery has to be forced is, according to Dickinson, as follows:

For induction in the latter months and for inertia during labor (other causes being eliminated, such as exhaustion, over-distension and malposition of passage or passenger), the bag comes first, then the hand, and the forceps finish their work. For placenta previa, the balloon for the narrow cervix that bleeds when the head will not plug it and, in bad cases, version, since the thigh is the surest tampon. For brisk hemorrhage of detachment of a normally located placenta, the greatest speed, manual or metal dilatation. For the rigid cervix of the early months and the unyielding girdle of the primipara or the gristly hardness of eclampsia, the powerful Bossi instrument is a great boon, and none of its imitators approach it.

He asks for a careful study of the various methods lest the European enthusiasm for the branched dilator go beyond bounds.

46. **Cesarean Section.**—The indications for cesarean section are noticed by Webster, and the technic described. It is advisable in some rare cases of eclampsia or when the eclamptic dies, the fetus being still alive, but its routine practice is unjustifiable. Vaginal cesarean section is to be recommended in cases of eclampsia in pregnancy or in early labor in which the cervix is rigid and difficult to dilate. It is in such conditions a safer and more scientific procedure than Dührssen's incisions or forcible stretching with metal dilators, as it produces a clean incision in the mesial plane of the cervix and lower uterine segment, hemorrhage from which may be readily controlled. In placenta previa abdominal cesarean section was first advised by Lawson Tait, but Webster considers it rarely indicated, and only when some condition exists rendering the ordinary methods hazardous or impossible. In accidental hemorrhage or placental detachment it has been rarely employed and should be considered only when impossible to carry out the other procedures by the vaginal route. Vaginal cesarean section is indicated in cases of accidental hemorrhage with a critical condition of the patient, and it is impossible to rapidly dilate the cervix by the ordinary means, provided a competent operator is at hand. Also in affections of the heart, lungs, kidneys, etc., where the mother is in danger, and rapid delivery is indicated, the vaginal method is preferable. Abdominal operation should not be employed except where the other is impossible. In case of the mother *in articulo mortis* carrying a viable fetus, or after the death of the mother, it should be the duty of the physician to advise immediate cesarean section in the hope of saving the child The abdominal operation is the easiest and quickest in such cases.

47. **Cervical Incisions in Labor.**—The following are the conclusions of Holmes' article in regard to Dührssen's operation:

1. The contributions of Dührssen to the subject of cervical incisions are not sufficiently original to warrant a proprietary right in the nomenclature: Coutouly, Baudelocque, Bedford, Braun and Skutsch did much to develop our knowledge of the subject. 2. Effacement of the cervix is an indispensable prerequisite to the use of incisions. For this reason incisions are especially applicable to primiparæ and often are contraindicated in multiparæ. 3. Incisions are indisputably of value, even necessary in essential indications. In contributory indications their use is a moot question; the judgment of the operator must decide in individual cases. 4. Manual dilatation preliminary to incisions does not secure the best cervical condition for incisions. 5. Incisions always are potentially dangerous; dangers comprise infection, hemorrhage and extensive lacerations beyond the vaginal vault. 6. Use of incisions demands an obstetric armamentarium, assistants and a definite experience in obstetric procedures. 7. The details of the technic may be modified to suit the taste of the operator. 8. The minimum number of incisions to meet the exigencies of the case should be made. 9. Oblique incisions may be proven to be more advantageous as regards the after effects than the usual quadrant cuts. 10. In the absence of hemorrhage or accessory lacerations, it is a moot question whether the incisions should be sewed up or not. 11. Immediate delivery should follow the incisions.

48. **Bossi Dilators.**—De Lee's opinion, based on three cases and the study of many reported cases, is that there is a small field of usefulness for the Bossi dilator where rapid dilatation of the cervix is necessary after effacement. Before effacement, the colpeurynter should be used. It will be more successful in multiparæ. The dilator will also be useful in dilating the cervix where manual dilatation would be successful. It is more aseptic and the operation is not tiring. The instrument is not safe, but requires careful and skilled watchfulness, and one must search for and be ready to repair more or less extensive lacerations. These are greater in primiparæ. It should never be used in placenta previa. It does not replace the colpeurynter, the use of the hand or cervix incisions in all cases.

49. **Toxemia of Pregnancy.**—Norris thinks that some cases of sudden death after labor can be explained by an unrecognized toxemia originating during pregnancy and suddenly declaring itself by what he has termed a cardiac eclampsia, overwhelming the heart.

52. **Ectopic Gestation.**—Bovée has changed his opinion as to the availability of the vaginal route in operations for tubal pregnancy. His reasons for preferring the abdominal route are given as follows:

1. The field of hemorrhage can be more quickly reached by this route, taking into consideration the relative amount of time consumed in cleansing the two routes under anesthesia. 2. The condition can be the more readily treated and the ligation of blood vessels more readily and certainly performed. 3. The danger from

secondary hemorrhage in ectopic pregnancy is markedly less when ligation is practiced than when removal of blood clots alone is practiced. 4. Any other important pathologic lesion requiring attention in suitable cases may be treated at the same sitting. 5. The shock, as a rule, will be less than if the vaginal incision and abdominal incision are both made. 6. The tube can be more readily removed than by the vaginal route. 7. The abdominal route is applicable in all stages of the pregnancy, while the vaginal can not be employed for the later stages. 8. The vaginal incision has no place in the treatment of unruptured tubal pregnancy, while the abdominal incision is the route *par excellence*.

53. **Cysts of the Peritoneum.**—The explanation of the cysts here given by Dickson is that they are dilated lymph spaces, and are associated with those diseases of the tube and generative organs which are capable of interfering with the free circulation of lymph in the tubal peritoneum.

55. **Placenta Previa.**—After a rapid review of the literature Moran reports briefly five cases of his own observation. He thinks no fixed routine of treatment can be adopted in these cases. There is rarely any difficulty in lateral previa. In the marginal, however, it becomes more dangerous and the central variety is always a matter of grave concern. Hemorrhage and sepsis are the greatest dangers, and rupture of the uterus as a third factor may be added in accouchement forcé, especially when an attempt is made to deliver the child with an insufficiently dilated cervix. Thorough asepsis, rupture of the membrane, partial detachment of the placenta, efficient tampon, dilatation of the cervix with Barnes' or McLean's bag and application of forceps should give good results in the majority of marginal cases. Where version is indicated and there is a possible choice between bi-polar and internal version, the former will be the safer procedure for the general practitioner. As regards cesarean section, he thinks further experience will have to determine the indications, but the statistics are not very encouraging.

Cleveland Medical Journal.

July.

57 *Rheumatism in Childhood. Alfred Friedlander.
58 The Laboratory Methods in Ohio's State Hospitals. A. P. Ohlmacher.
59 The Relative Value of Diagnosis. F. C. Gray.
60 *The Treatment of Puerperal Eclampsia, with a Report of Cases. F. S. Clark.

57. **Rheumatism in Children.**—Friedlander notices the characteristics of rheumatism as it occurs in children. He considers that infection is generally through the tonsils. Its clinical manifestations are very different from those in adult life; the arthritic symptoms are not so well marked. Rheumatic purpura is quite common in childhood, and rheumatic nodules occur more often in the rheumatism of children. Another symptom, often of diagnostic import, is recurrent epistaxis for which no cause can be found. While diagnosis in the adult is easy, in children, owing to its atypical course, the symptoms not following in the regular way, and many of the usually prominent ones being absent at times, it may be difficult. The onset of an endocarditis which may be an initial phase of the disease is often very insidious; the continuous fever with slight remissions, though of considerably low degree, not explainable by other definite infection, is one of the most valuable signs of beginning endocarditis we have. We do not have the successive involvement of many joints as in adults. In doubtful cases special attention should be paid to the family history, to the previous history of the patient as regards slight joint stiffness, swelling, so-called growing pains, nose bleed, frequent attacks of tonsillitis, and erythema, and the examination of the heart for signs of endo- or pericarditis and temperature. Rheumatic children do best on a generous dietary with special limitations applied to sugar and starchy foods. Malnutrition is frequently a factor in the cases and milk should be taken in large quantities, plenty of green vegetables and moderate amounts of the more easily assimilated meats. They should wear flannel the year round and avoid exposure to the cold east winds when it is slushy under foot. For actual attacks, the salicylates in combination with bicarbonate of soda are the best treatment. To get good effects the amounts must be rather large. Local applications to the joints are not always necessary. A tendency to frequent recurrence heightens the danger of heart involvement.

60. **Puerperal Eclampsia.**—The treatment of puerperal eclampsia, according to Clark, consists first in the removal of toxins. Failure of the kidneys is our best guide. Mild alkaline waters are our best diuretics. The bowels should be moved freely; phosphate of soda in small doses is an excellent laxative. High injections of saline act by flushing out the bowels. Where the convulsions can not be controlled without terminating labor, the uterus should be emptied. He can not recommend cesarean section. Veratrum viride he finds to be often useful, and calomel in fairly large doses by the mouth and still larger ones by the rectum, is good for controlling convulsions. Chloroform is of value to hold the convulsions in check until other remedies can take effect, but for this purpose it should be used continuously and not intermittently. He reports three cases and insists on the importance of prophylaxis.

Archives of Pediatrics, New York.

July.

61 *A Report of Eight Cases of Pneumonia in Infancy Treated with Antipneumococcic Serum. John Lovett Morse.
62 *Principles of Infant Feeding as Based on the Evolution of Mammals. Henry D. Chapin.
63 *Acetone and Diacetic Acid as a Cause of Persistent Recurrent Vomiting of Children. Edward L. Pierson.
64 A Severe Case of Chorea Complicated by Pneumonia. C. F. Judson.
65 Pharyngeal Croup Relieved by Nasal Intubation (Soft Rubber Tubes). W. P. Northrup.
66 O'Dwyer Intubation Instruments. Added Small Tubes for Infants Under One Year. Exhibition of Modern Complete Set. W. P. Northrup.

61. **Antipneumococcic Serum in Pneumonia.**—In the eight cases here reported by Morse the effect of the antipneumococcic serum was apparently negative. It seemed to have no effect on the course of the disease or its symptoms.

62. **Infant Feeding.**—Chapin studies the evolution of infant feeding based on the evolution of the species, and discusses the various forms of mammalian life and the developmental life of the fetus. He offers the following, which he thinks are of value:

1. An infant undergoes three stages of development and nutrition: Pre-placental, placental and mammary; and should be looked on as attached to the mother in all three. 2. At the beginning of the mammary stage, an infant has only the rudiment of a true stomach. 3. During the period of mammary development the mother first changes the character of the infant's nourishment from colostrum to milk, and then the infant's digestive secretions so change the character of the milk that, as the digestive juices increase in quantity and strength, the work of digestion is not thereby lessened but, rather, increased, as the stronger the gastric juices become, the tougher the milk curds become, owing to the acid combining with the curds. 4. The milks of all animals will produce good tissue. They differ in composition according to the rate of growth of the young animals. Their proteids differ in accordance with the type of digestive tract they are to develop. 5. No known method of procedure will convert cow's milk into human milk. All methods of artificial feeding must have in view the production of food that will adapt itself to the developing digestive tract. All substances, aside from breast milk, are foreign to the infant's digestive tract, and may at times cause disturbance. 6. In artificial infant feeding, certain minimum quantities of digestible proteid, fat, carbohydrates and mineral matters are needed. The mean composition of breast milk will serve as a general guide to the nutritive requirements of infants. 7. Milk must be the basis of an infant's food, not alone because it contains animal proteid, but because it contains the only available form of proteid that possesses the function of developing the digestive tract. 8. The proteid of cow's milk, which was intended to develop a calf's stomach to digest grass, must be modified or adapted to the infant's stomach. 9. This may be done by chemically or mechanically altering the character of the curds, by diluting milk with either alkalies or gruels. 10. When, for any reason, a sufficient quantity of proteid of cow's milk can not be given, it must be supplemented by other forms of nucleoalbumins until the normal quantity can be digested. It is a gross error to feed too low proteids of milk simply to overcome indigestion.

63. **Recurrent Vomiting of Children.**—In the three cases studied by Pierson of psychic or recurrent vomiting of children, he carefully examined the urine and found diacetic acid present either just preceding or in the early stages of the attack. The treatment used was bicarbonate of soda, given rectally, in quantities up to 100 or 125 grains a day. He thinks there is no question but that the attacks are prevented by this treatment, and that acetone and diacetic acid are present in the urine before or in the very early stages of an attack.

American Journal of the Medical Sciences, Philadelphia.

July.

67 A Case of Gunshot Wound of the Brain in which the Roentgen Rays Showed the Presence of Eight Fragments of the Bullet; Localization by Sweet's Method Made Operation Inadvisable. W. W. Keen and William M. Sweet.

68 A Report of Two Cases of Multiple Sarcomatosis of the Central Nervous System and of One Case of Intramedullary Primary Sarcoma of the Spinal Cord. William G. Spiller and William F. Hendrickson.
70 *Histologic Character and Diagnosis of Malignant Neoplasms of the Digestive Organs and Peritoneum. John C. Hemmeter.
71 Syphilis of the Trachea and Bronchi. Lewis A. Conner.
72 The Prominence of the Eyeball and a Method for Measuring It. Edward Jackson.
73 *Localization of Foreign Bodies in the Eye and Their Removal, with Report of Cases. Louis C. Deane.
74 *The Lymphatic System and the Tonsils. Henry L. Swain.
75 *The Indications for Operative Intervention in Middle-ear Suppuration. Barton H. Potts.
76 *A Xiphosternal Crunching Sound. Myer Solis-Cohen.
77 The Cellular Changes in Tuberculous Leptomeningitis. I. B. Diamond.
78 A Case of Paralysis of the Sixth and Seventh Cranial Nerves of the Right Side, with Hemiplegia of the Opposite Side. E. Andrade.
79 Hiccough: Report of a Case. L. W. Atlee.
80 Clinical Gonorrhea without the Gonococcus. A. L. Benedict.

70. **Neoplasms of the Digestive Organs.**—The subject is discussed at length with reference to the leading articles in the literature. The diagnosis is specially noticed, and its difficulties, which are marked in cases where there are no metastases or other palpable evidences of malignancy. In the conclusion of his article Hemmeter treats of the transformation of gastric ulcer into malignant disease. The practical deductions of the histologic diagnosis which can be made from the studies of Hauser, Fütterer and himself, are that it is possible to diagnose carcinoma or ulcer of the stomach histologically by the characteristic behavior of the true muscularis and the muscularis mucosæ and by the fish-hook form of the fissure presented in the outline of the section through the edge of the ulcer nearest the pylorus. By these features he thinks we are justified in concluding that any gastric adenocarcinoma presenting them has been developed on a pre-existing gastric ulcer.

73. **Foreign Bodies in the Eye.**—Deane describes a method of locating foreign bodies in the eye and reports cases. According to his experience a scleral incision has been in many cases more satisfactory than trying to extract the substance anteriorly with a giant magnet.

74. **The Lymphatic System and the Tonsils.**—The importance of the tonsils as introducers of infection is discussed by Swain, who reports a case at some length. He thinks the pharyngeal tonsil is the one most frequently attacked in children, and its inflammations are the most likely to endanger the general system. He does not advocate the indiscriminate removal of tonsils. The practical point is, he thinks, when we operate to be thorough in what we do and always remember that we have still some tonsillar tissue left. The patient has still all the chances of being infected. We have not given an immunity because we have operated, we have only given a lessened liability, and should not dismiss the case as needing no further care.

75. **Middle Ear Suppuration.**—Cases are reported by Potts showing the points of diagnosis. He reviews the symptoms indicating operation in many of the cases, which are given by him in substance as follows:

1. Profuse and long-continued discharge indicating a possible anterior or mastoid involvement and fluctuating swelling over the mastoid, diagnostic when present, but its absence not contraindicating operation. Edema behind the auricle is more apt to be due to furuncle, and tenderness over the mastoid, especially in the region of the antrum, is of great significance whenever present, but may be doubtful or absent if the outer table is much sclerosed. The inflamed, tender and bulging upper and posterior canal wall is one of the most important signs of all, and its non-relief by treatment is a sure indication for operation, as also is a sinus, whatever its location, leading into the mastoid. Facial palsy is of interest but not important. Epileptiform attacks are unusual, but indicate a possible cerebral pressure. Marked and rapid failure in the health is more apt to be found in adults than children. The temperature is more liable to be elevated in children than in adults. Rapid fluctuations of temperature over a range of several degrees is the most important sign of pyemia. Other symptoms are the slow and thready pulse, out of proportion to the elevation of temperature, irregularity or sluggishness of pupils, rapid failure of health and rigors or convulsions, all signs of intracranial pressure. Tenderness and edema over the occipital are very apt to be present when the sinus is thrombosed. Bacteriologic examinations are not positive, but are important.

76. **A Xiphosternal Crunching Sound.**—This sound, which has not been noticed apparently in many text-books, is described by Solis-Cohen, who reports cases in which it was observed. It is difficult to describe. Before he selected the present designation he called it "friction-sound," "rough rubbing, clicking sound," "brushing sound," "scraping sound," etc. He is inclined to believe that it is due to white patches in the pericardium, and quotes Roberts from Allbutt's System of Medicine, and Gibson, in support of this view.

Archives of Ophthalmology, New York.

July.

81 Aplasia of the Papilla and Retinal Vessels, with a Peculiar Anomaly at the Macula in Eyes Otherwise Normal. Alexander Duane.
82 *Retinal Rosette Formations of Neuroglia in Inflammatory Processes. Brown Pusey.
83 *Cytotoxins and Sympathetic Ophthalmia. Brown Pusey.
84 On Congenital Cysts of the Eyeball and Their Development. C. Hess.
85 *Asthenopia Dependent on Neurasthenia and Hysteria. H. Gradle.
86 *Double Optic Neuritis Complicating Whooping Cough. William E. Gamble.
87 Periscopic Lenses. A. S. Percival.
88 Polypus of the Lower Canaliculus. S. C. Ayres.
89 *The Extirpation of the Lachrymal Sac; Its Indications and Technic. Arnold Knapp.
90 *The Mental Derangement which Is Occasionally Developed in Patients in Eye Hospitals. Charles J. Kipp.

82. **Retinal Rosette Formations.**—Pusey describes a case analogous to those already described by Murakami of these rosette formations associated with a pure inflammatory process. In the case reported an acute general inflammation of the globe followed an old irritative process. The rods and cones disappeared while the fibrous structures persisted, and even appeared to be increased. In the midst of these changes the rosettes occurred. He accounts for them by holding that they are due to folds in the retina, probably caused by shrinkage of the bands in the vitreous. He thinks they probably have been seen before, but their resemblance to the rosette formations of tumors has not been appreciated.

83. **Sympathetic Ophthalmia and Cytotoxins.**—Pusey reports experiments to test whether a heterotoxic serum for the eye can be obtained that might account for the phenomena of sympathetic ophthalmia. His results are negative, but they do not disprove the theory that toxic influences are at work in inducing this condition. There are possibly defects in the experiments which render these negative results inconclusive. He is waiting for an opportunity to try an injection of blood serum from the blood of a patient suffering with sympathetic ophthalmia into the blood of a monkey.

85. **Neurasthenic Asthenopia.**—Gradle describes the condition of asthenopia frequently met with in hysterical and neurasthenic cases in connection with more or less impaired health, anemia, neurasthenic conditions, etc. In a small proportion the discomfort was started in the illy-nourished and neurasthenic by a low grade of catarrhal conjunctivitis and in a large number of cases there was no error of refraction or insufficiency of accommodation. He speaks particularly of the value of mental treatment in these cases when glasses have failed.

86. **Optic Neuritis of Whooping Cough.**—In the four cases reported, optic neuritis occurred about the fourteenth day of the convulsive stage in one-half the cases, and in the other two after some weeks or months, the connection not being so manifest. Evidences of cerebral trouble, headache, etc., were present in only two cases. Gamble thinks optic neuritis in these cases is probably intraocular. The conclusions suggested are that optic neuritis complicating whooping cough seems to occur more frequently in girls, all his cases being in girls. It may occur with or without evidence of cerebral complication. The vision may or may not be disturbed. The prognosis as to sight is good when there is no cerebral complication. It seems probable that optic neuritis may result from the direct action of toxins or pertussis on the nerve-head.

89. **Extirpation of the Lachrymal Sac.**—Knapp enumerates the indications for this operation as chronic purulent dacrocystitis resistant to treatment, repeated attacks of acute dacrocystitis with abscess, whenever the sac is dilated whether the contents can be expressed or not, and lachrymal fistula. Either local or general anesthesia may be employed. He makes an incision just below the internal canthal ligament,

passing down and out along the prominent orbital margin for 1.5 to 2.5 cm. The ligament may or may not be divided. If it should be, care should be taken to join the divided parts at the termination of the operation to prevent the possible sinking in of the caruncle. The incision is carried down through the tissue until the sac is exposed. It is usually recognized by its pale red or bluish-red smooth uniform surface. Hemorrhage in the lower part of the incision may be annoying, but can usually be controlled by retraction and compression. The sac is isolated by blunt dissection from its inner wall, proceeding upward, and the cupola freed. It can be more or less lifted out of the fossa. The outer surface must be separated by cutting with small blunt scissors, the attachment above and outward to the canaliculi being carefully separated. It is cut off as low down in the lachrymal canal as possible, and the canal is thoroughly curetted with a small spoon. Then with reflected light a careful inspection is made for any remaining islet of mucous membrane, granulations, inflamed periosteum, or carious bone, which conditions should all be properly met and radically treated. Special care must be used to see that the top of the lachrymal fossa is perfectly clean. If the bone on the inner wall is diseased and superficial curetting be deemed not sufficient, a free opening should be made right into the nose. This enables the removal of the diseased bone and insures proper drainage. The operation is concluded by the exact approximation of the wound edges with two or three sutures, and the cavity is obliterated by pressure on it kept up in the dressings for the next two or three days. The difficulty varies according to the inflammation and adhesions present. Primary union with obliteration of the cavity can be secured in most cases.

90. **Post-Operative Mental Disturbance.**—Twelve cases are reported by Kipp of mental disturbance following operations on the eyes, occurring in both sexes, but mostly in males; the majority had passed middle age. The recovery was very speedy after the patients could be removed to their own homes. He reviews the literature of the subject, that is the ophthalmologic literature, but finds little by American authors. He thinks the cause of the delirium is largely psychic and due to preoccupation on the part of the patient prior to and after the operation. He calls it homesickness, nostalgia with suicidal and homicidal propensities. He has thus far not used restraint but thinks he may have to in future cases. The quickest way to restore the mental equilibrium is to send the patient home. If this is impossible transfer him to some other quarters and give him the society he is accustomed to as far as possible.

St. Louis Courier of Medicine.

July.

91 *The Operative Treatment of Closed Fractures of the Patella. T. W. Huntington.
92 *A Case of Painless Labor, with Special Consideration of the Cause of this Condition. Arthur N. Curtis.
93 *A Bloodless Case of Placenta Previa. W. G. Moore.
94 Diet in Summer Complaint. William F. Waugh.

91. **Fractures of the Patella.**—Huntington reviews the methods and criticises the subcutaneous suture operation as making no provision for toilet of the synovial cavity or adjustment of the aponeurotic fringes and as not by any means a security against germ infection. His routine method is similar to that described and followed by Stimson and other writers: making a transverse incision about 1 c.c. below the point of fracture, clearing the anterior chamber of clots and serum and sponging with small mounted gauze pads, avoiding irrigation as not only unnecessary, but even dangerous. The aponeurotic fringes are carefully everted and held by snap forceps. Any lacerations in the synovial membrane, which are very common, are carefully repaired by suturing with fine catgut. The fragments are then approximated and firmly held while the aponeuroses are sutured with a No. 2 chromicized gut, care being taken as to adjustment, the needle being carried from without inward toward the periosteum, thence under both edges of the fringe and brought out on the opposite side. It is then reversed and inserted about half an inch from the point of emergence, passing from without inward again under both fringes and out at the same distance from the point of original ingress and tied. This gives a mattress suture, the fringes being supported from below by the two lateral arms of the suture, and prevented from becoming re-engaged between the fractured surfaces. The everted edges of the two margins are thus adjusted so as to unite by a firm cicatrix. Another important end attained, he claims, is the prevention of the outward tilting of the fragments, and the securing of the best possible approximation of fractured surfaces. The external wound is closed by silkworm-gut sutures carried through the everted edges of the aponeurosis and thus obliterating the intervening dead space. Over a voluminous dressing, a plaster-of-paris splint is applied, extending from the upper thigh to the ball of the foot and left in place, unless temperature rises, until time for removal of the skin sutures. At the end of the second week in ordinary cases he would cautiously undertake passive motion. Progress will necessarily be slow until the end of the seventh or eighth week, at which time the normal range of the joint movement will be reestablished. He reports a number of cases, all successful.

92. **Painless Labor.**—Curtis reports a case of painless labor in a primipara with a child weighing eight pounds. The patient was neurotic. He explains the phenomenon on the bases of a peculiar anesthesia of the parts due to this neurotic condition. He alludes to the fact that painless labor may be due to hysteria and considers a condition of hysterical uterovaginal anesthesia, not interfering with normal contractions, as probably the cause in this and other like cases.

93. **Placenta Previa.**—In the case reported by Moore, half of the placenta, with about four inches of the cord, was pushed outside without any hemorrhage, and the patient gave birth to a living child of about seven or eight months' development. The other half of the placenta was found adherent to the os uteri and removed without difficulty or hemorrhage. Moore considers this case unique and explains it on the ground of a central implantation of the placenta, which, being thinner than usual, was sufficiently elastic to allow a small head to be engaged, dilating the os, which acted as a stopper until the placenta ruptured, permitting the body to follow it until delivery was completed.

Iowa Medical Journal, Des Moines.

July 15.

95 The Treatment of Intestinal Obstruction. Charles Woodhull Eaton.
96 *Spurious Tapeworms or Parasitism Due to Undigested Bananas. Walter L. Bierring and Henry Albert.
97 *The Sound of Muscular Contraction. Walter E. Scott.
98 Why Have There Been so Few Results from Original Scientific Research in State Hospitals for the Insane? J. U. Wherry.
99 A Contribution to the Literature of Dislocations of the Shoulder. Lewis Schooler.

96. **Spurious Tapeworm.**—Bierring and Albert noticed a peculiar appearance resembling a parasite which they thought probably might be *Tenia nana*, the smallest known tapeworm, but which Stiles proved to be the tissue from a banana. They give illustrations of the appearances.

97. **The Sound of Muscular Contraction.**—Scott describes the sound of muscular contraction, which he thinks is largely responsible for the general vesicular respiratory sound. He has never seen any allusion to this sound in any article on the subject. He has noticed it especially in tetanus, and its absence may be of value in the diagnosis of muscular degeneration, paralysis, atrophy, etc.

Interstate Medical Journal, St. Louis.

July.

100 *A Contribution to the Therapy of Enuresis. John Zahorsky.
101 *Some Experiences with Local and General Anesthetics. T. C. Witherspoon.
102 *The Blood in Diseases of the Digestive Tract. Albert E. Taussig.
103 Reports on Radiotherapy: 1. Cure of Epithelioma of the Tongue. 2. Result in the Treatment of Axillary Hyperidrosis. 3. A Cream Paste for X-Ray Burns. Martin F. Engman.
104 A Case of Suppurative Parotitis Complicating Pneumonia. C. J. March.

100. **Enuresis.**—Zahorsky notices the various methods that have been employed for urinary incontinence and favors the

cerebral theory of the disorder. The treatment which he has lately followed with considerable success is given by him as follows: Two doses of a diuretic during the day, one at 9 a. m. and the other at 2 p. m., usually the alkaline citrates with spirit of nitrous ether, but he has also used caffein and diuretin, and sodium benzoate. One dose of atropin at night, substituted sometimes by rhus aromatic or antipyrin. He also uses Prendergast's method of cold douching the back. It is too early to speak of positive results, which he promises in a future communication.

101. **Anesthetics.**—Witherspoon discusses the use of local anesthesia, for which he prefers eucain in most cases. It is not so toxic as cocain and can be sterilized by boiling. It is interesting to notice how little of the drug can be effective. He mentions a case of strangulated hernia operated on with 1/16 of a grain, and he is especially impressed with its effects in partial thyroidectomy. He has also operated with it in cases of empyema with great advantage and used the method in operations on the nerves of the lower extremities. When there is great irritability at the anus and lower rectum he has been rendered the greatest service by injections into the triangular open space at the lower end of the sacrum posteriorly, and in this way has operated on several fissures and fistulas of the rectum. He has tracheotomized the adult three times for the purpose of giving a general anesthetic afterward. In using an anesthetic on the mucous membrane or open surface he relies on cocain, and has no bad effects from its careful use. When general anesthesia is required he prefers chloroform unless contraindicated.

102. **Blood in Diseases of the Digestive Tract.**—Taussig sums up as follows:

> In esophageal affections there is usually no characteristic blood change. In gastric cancer the leucocyte count as such does not always give reliable information. The absence of a digestive leucocytosis, however, is significant, and would be more so if chronic gastritis with dilatation, and especially gastric atrophy, did not produce a similar picture. The latter affection is often characterized by the interesting changes of pernicious anemia. The other gastric affections produce no distinguishing blood changes. Of the intestinal disorders, it is, especially in appendicitis, that the leucocyte count is of value. Here suppuration is characterized by a marked leucocytosis, though this may be absent if the abscess is thoroughly encapsulated. On the other hand, both a mild and a desperately severe case of appendicitis fail to produce leucocytosis.

The blood examination in diseases of the digestive tract, while never giving such precise information as to supplant clinical observation, is often a valuable aid to diagnosis, and should not be neglected.

Southern California Practitioner, Los Angeles.

July.

105 *Treatment of Ununited Fractures of the Femur. LeMoyne Wills.
106 Vaginal Fistulæ. W. W. Beckett.
107 Ectopic Gestation. W. W. Roblee.
108 Clinic Results with Roentgen's Rays. Albert Soiland.
109 Child Life or Responsibility to Offspring. Kate Wilde.
110 Proper Hygiene in Our Schools from the Ophthalmologist's Point of View. W. E. Hibbard.
111 Some Observations Made on the Inspection of Schools. L. M. Powers.
112 Important Relations of Blood Pressure to Therapeutics. John A. Colliver.
113 A Study of Immunity, Ehrlich's Side-Chain Theory. F. M. Pottenger.
114 The Public School and the Growing Girl. Louis H. Clarke.

105. **Fractures of the Femur.**—The treatment of ununited fractures of the femur are especially noted by Wills, who reports a case and calls attention to the following points: 1. The futility of any treatment except incision, turning out the ends of the bone, freshening them and suturing with heavy silver wire or clamp. 2. The necessity for absolute immobility of the thigh and leg on body by a plaster spica or bandage from toe to waist. 3. The relaxation of calf muscles by flexion of the knee at an angle of 45 degrees. 4. The importance of equable pressure about the entire limb, especially at the seat of the fracture. In his case too large a fenestra was cut in the plaster bandage for drainage purposes. The result is, he thinks, the slight angularity which was observed.

Medical Fortnightly, St. Louis.

July 25.

115 President's Address, Tri-State Medical Society. Alexander Hugh Ferguson.
116 Report of a Case of Amebic Dysentery in Illinois, with Special Reference to "Acetozone" Treatment. R. L. Kurtz.
117 Torsion of the Testicles. W. W. Williams.

Clinical Review, Chicago.

August.

118 Two Cases of Multiple Neuritis. Sidney Kuh.
119 Pathogenesis of Locomotor Ataxia. (Continued.) G. B. Hassin.
120 Lectures in Gynecology. Franklin H. Martin.
121 Clinical Lectures on the Etiology, Pathology, Diagnosis and Treatment of Tumors. A. H. Levings

Occidental Medical Times, San Francisco.

July.

122 The Cure of Crosseyes. Vard H. Hulen.
123 The Value of Blood Pressure Observations in Surgery. Wallace I. Terry.
124 Typhoid Fever at Palo Alto and Stanford University. Ray Lyman Wilbur.
125 Suppression of the Urine Relieved by Decapsulation. George L. Eaton.
126 Homo Delinquens. (To be continued.) Kund Pontoppidan.

Carolina Medical Journal, Charlotte, N. C.

July.

127 Surgery of the Prostate Gland. A. J. Crowell.
128 Drugs and Whisky Habit and Treatment. S. M. Crowell.

Albany Medical Annals.

August.

129 Report of a Series of Cases from the Maternity Department of the Albany Hospital. William H. Happel.
130 A Case of Lipoma of the Tonsil. Clement F. Theisen.
131 A Note on the Embryonal Glandular Tumors of the Kidney. George Bulmer.
132 Acid Autointoxication Apart from Diabetes Mellitus. James F. Rooney.

American Medical Compend, Toledo, Ohio.

August.

133 Some Practical Thoughts on Infant Feeding. William A. Dickey.
134 The Baby's Cold. Park L. Myers.
135 The Baby: His Rights and Expectations. William W. Pennell.
136 The Wintering of Children. Mark Millikin.
137 Simple Cyst of the Kidney; Diagnosis and Treatment, with Report of Two Cases. Joseph F. Fox.
138 Stammering; Its Causes and Cure. J. S. Hanson.

Medical Herald, St. Joseph, Mo.

July.

139 *Medical Education in the United States. Frank S. Billings.
140 *A Study of a Case of Dual Personality. S. Grover Burnett.
141 A Layman on Antitoxin. E. W. Caldwell.
142 Treatment for Relief of Nasal Reflexes, with Report of Cases. F. W. Dean.

139.—This article appeared in THE JOURNAL, xl, p. 1271.

139.—This article appeared elsewhere. See THE JOURNAL of August 8, ¶53, p. 394.

Medical Times, New York.

August.

143 Malarial Fevers. W. C. Cole.
144 Colles' Fracture. F. D. Cartwright.
145 Uterine Curettage; Its Indications and Technic. W. G. Birchett.
146 Jottings from My Note Book. William Wormley.
147 Venereal Diseases. M. E. Fitch.
148 A Discussion on Nervous Subjects. A. R. Williamson.

Woman's Medical Journal, Toledo, Ohio.

June.

149 Temperature Course Unusual in Two Cases: First, in Woman Preceding Premature Delivery; Second, Case in Premature Infant. Anna E. Blount.
150 Problems in Sanitation. Martha Anderson.
151 The Late Dr. Emily Howard Stowe of Canada. Helen MacMurchy.

Kansas City Medical Record.

July.

152 The Bile Passages. M. P. Overholser.
153 The Early Diagnosis of Pulmonary Consumption and Its Importance. R. O. Cross.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

August 1.

1 *President's Address, British Medical Association. The Evolution of Antiseptic Surgery and Its Influence on the Progress and Advancement of Bacteriology and Therapeutics. T. D. Griffiths.

2 *Address in Medicine. On Infective and Infectious Diseases. Frederick T. Roberts.
3 *Address in Surgery, Observations on the Evolution of Abdominal Surgery from Personal Reminiscences Extending Over a Third of a Century and the Performance of 2,000 Operations. A. W. Mayo Robson.

1, 2, and 3.—See the report of the British Medical Association, including these addresses, on a previous page of this issue.

The Lancet, London.

August 1.

4 President's Address, The Evolution of Antiseptic Surgery and Its Influence on the Progress and Advancement of Bacteriology and Therapeutics. T. D. Griffiths.
5 Address in Medicine, Infective and Infectious Diseases. Frederick T. Roberts.
6 Address in Surgery, Observations on the Evolution of Abdominal Surgery from Personal Reminiscences Extending Over a Third of a Century and the Performance of 2,000 Operations. A. W. Mayo Robson.
7 *The Causes, Prevalence and Control of Pulmonary Tuberculosis. H. Timbrell Bulstrode.
8 A Case of Recurrent Varioloid Rash Following Vaccination. R. W. C. Pierce.
9 *The Ill Health of Richard Wagner. George M. Gould.
10 The Estimation of Free Hydrochloric Acid in the Gastric Contents. J. J. R. MacLeod.

7. **Tuberculosis.**—Bulstrode, in his second lecture, gives and discusses the statistics of tuberculosis in Italy, where the figures are apparently lower than in most other European countries, which fact he thinks might be regarded by some persons as affording a strong argument in favor of the adoption of preventive measures, such as were in vogue many years ago in that country. The statistics of Portugal are also given, showing a like decrease, though since 1886 and 1890 there has been an increase in the rate of pulmonary tuberculosis and a greater decrease in other forms, which looks as though there had been some transferment of tuberculosis from one group to another. The figures are of some interest as compared with those of Prussia, which were given in his former lecture. The New York statistics are noticed and compared with those of London, showing that the decrease in New York figures in recent years has been greater than in London, which may in some measure be accounted for by the fact that the scope for decline is less in London than in New York. The records of the American occupation of Havana are interesting, showing a most wonderful decrease in that city under American control. He considers the work of Americans in Havana the most remarkable victory ever achieved by preventive medicine, and quotes the yellow fever statistics to support this statement. In Norway the statistics seem to show a slight increase; perhaps the only country in Europe where this occurs. In England and Wales there has been a slight increase in the rate of fall after 1881 and 1885, but a very marked decline since the 60's. In Australia the death rate from consumption seems to be lower than that of other parts of the world. But while the tendency of pulmonary and other forms of tuberculosis has been downward, that of pneumonia, cancer and heart disease has been on the increase. The fall in the death rate from tuberculosis in Queensland, which is next to the highest rate, is largely due to the decrease in the number of tuberculous natives from the Pacific Islands. There is rather an increase among the whites, and this is almost entirely due to those born in the colony. It is accounted for by Turner in the gradual maturity of the colonists. It is only of late years that many of them have reached the period of early adult life in which the disease claims most of its victims. In Scotland the statistics show a steady decrease. A curious fact is that in the Isle of Man, a sea-girt, wind-swept island, with equable climate and much sunshine, tuberculosis seems to be more common than on larger British islands. Of late years, however, there has been the same decrease as elsewhere. Ireland is another country which does not show a marked decrease in pulmonary tuberculosis, but rather an increase, though the ratio is nevertheless low. This may be largely due to the outflow of the healthiest of the population by emigration. In the conclusion of his lecture he suggests that we should not attribute too much importance to the discovery of the tuberculosis germ. It has not so fundamentally changed the face of affairs as is sometimes maintained.

9.—This article appeared in THE JOURNAL, August 1, p. 293.

Australasian Medical Gazette, Sydney.

June 20.

11 Electric Currents of High Frequency and High Tension and Their Action in Chronic Pulmonary Tuberculosis. William R. Fox.
12 Notes on a Case of Cerebellar Abscess of Otitic Origin. G. T. Hankins.
13 A Case of Cerebellar Abscess; Failure of Respiration During Operation; Recovery. J. H. Phipps.
14 Notes on a Case of Cerebellar Abscess. A. J. Brady.
15 *Notes on Filariasis. J. Flynn.
16 Notes on Filaria and Mosquitoes. Thomas L. Bancroft.
17 The Radical Cure of Hernia in Elderly People. C. MacLaurin.
18 Two Cases of Excision of the Rectum by the Methods of Kraske and Quenu. W. J. Stewart McKay.
19 The Injection of Paraffin Wax in Facial Deformities. Richard Arthur.

15. **Filariasis.**—Flynn reports his experience with this condition. He seems to hold that filaria has a sort of headquarters in the system and if that can be extirpated the parasites disappear from the blood. He gives a case where excision of a tumor in the left spermatic cord apparently completely extirpated filaria which had persisted in the blood after previous operation on other parts. That filaria can exist in the system without causing any symptoms whatever, he holds, is certain, and there are some interesting facts in regard to the entrance of the organisms. He says, if the mosquito bite is the usual mode of infection why is the disease not more common? One of his patients has been married for six years, and during all that time has been a victim of the disorder. His habits are careless, his house full of mosquitoes and his circumstances far from affluent, yet his wife is free from the infection as well as his cat, horse and dog, which show no signs of the disorder. He has not recognized household infection in any one of his series of cases, and, under the impression that tank water might supply some clue, he centrifuged several gallons of water from tanks containing the filaria mosquitoes, with negative results. As regards treatment, the rational method is to kill the parent organisms in their home or remove them if one can ascertain their abode. In one of his cases alluded to it appeared that he had removed them. It is more difficult, he finds, to meet the embryo in the winter, and he thinks it would be interesting to know what results residence in a cold climate would have on these patients.

Intercolonial Medical Journal of Australasia, Melbourne.

June 20.

20 *The Surgical Treatment of Dyspepsia. Fred D. Bird.
21 Modern Methods of Investigation in Diseases of the Stomach. John F. Wilkinson.
22 *Notes on Some Common Disorders of the Stomach. R. R. Stawell.
23 Alexander's Operation. J. Gerald Sheahan.
24 *The Treatment of Retro-deviations of the Uterus. J. W. Dunbar Hooper.
25 Common Digestive Troubles in Children. A. J. Wood.

20. **Surgical Treatment of Dyspepsia.**—The operative treatment of dyspepsia in cases of adhesions producing symptoms which can only be relieved by mechanical means is mentioned by Bird, and also adhesions connected with malignant disease. Adhesions also play a prominent part in chronic pancreatitis, which may reveal itself by tumor and be relieved by opening the gall bladder. With chronic pancreatitic adhesions and dyspeptic symptoms later, the resemblance to cancer is close, but even at the time of operation the nature of the condition present may be dubious. The healing of a gastric ulcer may cause dyspeptic symptoms with disability, which may only be relieved by operation. This is one of the most obvious occasions where the surgeon can intervene in long-standing gastric disorder. There are other adhesions in the perigastrium which may give rise to symptoms referable to the stomach, which he has noticed in earlier articles. The further experience of himself and friends only supports the position that he then took. Adhesions of variable causation in the epigastrium engender the symptoms of indigestion. They may produce

epigastric distress on slight provocation or without occasion, rendering the patient a permanent dyspeptic. They may even lead to severe and fatal illness. In one case where he had diagnosed such a condition the patient died from uncontrollable pain and vomiting and postmortem examination disclosed perigastric adhesions as the only apparent cause of death. When medical treatment fails, the surgeon may then intervene. Surgery can cure some cases of intractable dyspepsia easily and with the slightest risk. Others may be much improved and there is always the possibility of discovering malignant disease by operation.

22. **Common Stomach Disorders.**—Stawell notes those cases where there is a so-called functional disorder, nervous dyspepsia, though they may sometimes be associated with slight organic disease as in the dyspepsia of phthisis, which may cause serious derangement of digestion simply due to defective nutrition. Well-regulated rest and large meals insisted on will often relieve such conditions. The examination of the stomach contents should form the basis of diagnosis, but he comments on the neglect of the stomach tube by British medical men. He does not consider excessive tea drinking the cause of dyspeptic symptoms originally, as it is not the intolerable amount of tea, but the diminution of solid food associated with drinking which causes the gastric disturbance. The odorless and tasteless eructations and belching which occurred in one of his cases, comparable to hiccough caused by gastric irritation, are to a considerable extent controllable by voluntary effort. The ordinary eructations are not due to fermentative changes any more than is the "wind" or "hiccough" of infants. If the eructations are markedly acid there usually seems to be a secretory gastric irritability aroused by any particularly stimulating kind of food or drink. This must be classed as a neurosis and should receive the simplest symptomatic treatment by local "antacids." In conclusion he mentions gastric ulcer and chronic gastric catarrh with excessive mucus. The cause of the former is not known, and it may give some difficulty in diagnosis. Where there is doubt there should be some hesitation in the use of the stomach tube. He, however, does not hesitate to treat a suspicious case of gastric ulcer as if this diagnosis was certain. The commonest cause of gastric catarrh is not over-feeding or even improper food, but the abuse of alcohol; complete abstinence is often the very best treatment.

24. **Retrodeviations of the Uterus.**—Hooper criticises the methods of antefixation of the uterus and quotes from authorities, Dudley, Reed and others as to the dangers and impracticability of such methods, especially in child-bearing women. He thinks the most satisfactory results in such cases come from four or five weeks in bed with good nursing and the use of ichthyol tampons with hot vaginal irrigations and massage to reduce the subinvoluted uterus to its normal size, then a carefully adapted pessary and proper treatment for any existing endometritis are far better in uncomplicated cases. They are all, he thinks, that are needed to effect a relief of symptoms. If inflammation of the appendix or adhesions complicate the case, no surgeon would recommend the shortening or fixation operation. He reiterates his conviction that shortening operations such as the Alexander, Kelly and others should never be employed in single women or those who have not reached the menopause, even if we admit their usefulness in uncomplicated cases of retrodeviation in other women.

Indian Medical Gazette, Calcutta.

July.

26 Some Modern Views of Primary Glaucoma. R. H. Elliot.
27 A Note on Anopheles Fuliginosus and Sporozoits. J. R. Adie.
28 The Dissemination of Enteric Fever by Dust. A. R. Aldridge.
29 Cases Illustrating Difficulties in Plague Diagnosis. W. J. Buchanan and W. O. Hossack.
30 Colopexy for Prolapsus Recti. R. D. Murray.
31 Note on an Abnormality of the Radial Artery. Godroy Charles.

Journal of Tropical Medicine, London.

July 15.

32 A Note on the Parasites of a Case of Malignant Malaria, with Discussion on the Development of the Crescent. Malcolm Watson.
33 Tropical Hygiene. (Continued.) W. J. Simpson.

Presse Medicale, Paris.

34 (No. 43.) *Les infections vésicales et le bacille pyocyanique. H. Barth and G. Michaux.
35 Le régime alimentaire des diabétiques. A. Martinet.
36 (No. 44.) Le diagnostic de l'hémorrhagie méningée par ponction lombaire. F. Widal.
37 (No. 45.) *Y a-t-il un botryomycome? F. J. Bosc and J. Abadie.
38 Le tabes, dégénérescence du protoneurone centripète. E. de Massary.
39 (No. 46.) Le diagnostic de la méningite tuberculeuse et la ponction lombaire. Variot.
40 *Résultats durables du traitement des rétrécissements de l'urètre (of stricture of urethra). E. Desnos.
41 Bromatologie clinique de la pomme de terre (of the potato). A. Martinet.
42 (No. 47.) *Les débuts de l'histoire de l'appendicite en France. Howard A. Kelly (Baltimore).
43 (No. 48.) Etude sur l'association de l'appendicite et de la cholécystite avec ou sans péritonite. G. Dieulafoy.
44 Concomitance du goitre exophthalmique et de l'entéro-colite-muco-membraneuse. F. Bernard. Five cases.
45 Seringue double médicale. M. Schachmann.
46 (No. 49.) Vichy. La station 1569 to 1903. E. De Lavarenne.
47 (No. 50.) *Formes curables des hémorragies meningées sous-arachnoidiennes. A. Chauffard and others.
48 (No. 51.) *La cure de déchloruration. F. Widal and A. Javal.
49 (No. 52.) Considérations sur la linite plastique. Vautrin and L. Hoche.
50 (No. 53.) The Causes of the Failures of Digitalis. E. Barié. —Les causes d'insuccès de la digitale.
51 (No. 54.) La leucoplasie linguale. Gaucher.
52 Technique de l'allaitement artificielle. J. Thiénot.
53 (No. 55.) Bed for Preparing Patients for an Operation. F. Jayle.—Un lit pour la préparation des opérés.
54 Eruptions intermédiaires au pityriasis rosé de Gibert et aux séborrhéides psoriasiformes. Quelques généralités sur les faits de passage et la représentation graphique des dermatoses. L. Brocq.
55 Le régime alimentaire dans les néphrites chroniques. A. Mauté.
56 (No. 56.) Les chirurgiens sous Henri II. F. Jayle.
57 *La médecine au musée du Prado, Madrid. H. Meige.

34. **Pyocyaneus Infection of the Bladder.**—Barth describes a case of cystitis following la grippe in which the *Bacillus pyocyaneus* was found in pure cultures. Faltin has also reported similar findings in 4 out of 86 cases of cystitis. In 15 other cases it was associated with other bacteria. Neither urotropin nor salol proved efficient in conquering the infection. Barth's patient took 2 gm. of urotropin daily without banishing the bacilli, and rinsing the bladder with antiseptics likewise failed to dislodge them. But the symptoms of cystitis disappeared under this treatment and the pyocyaneus, although still present, seemed to have lost all virulence and persisted as an ordinary saprophyte.

37. **Is There a Bothryomycosis?**—Bosc gives histologic notes of 4 cases of lesions supposed to be caused by bothryomyces, but he denies this explanation and affirms that the lesions are merely fibro-papillomata secondarily infected with staphylococci.

40. **Treatment of Stricture of the Urethra.**—Desnos proclaims that fine and durable results can be attained by combined progressive dilation with electrolysis with a weak current. He fastens the negative electrode to an ordinary metal sound, with the positive electrode on the thigh. The current is turned on for ten to fifteen minutes, but not stronger than 3 to 4 milliamperes. This procedure is repeated at intervals of six to eight days. In 20 cases thus treated the dilation seemed to be more durable and the most rebellious strictures yielded after a few applications, while the walls seemed to become more flexible than by other methods of treatment.

42. **The Debuts of the History of Appendicitis in France.**—This address by Kelly was delivered before the French Société de Chirurgie in June, and created something of a sensation. Baudouin's witty comment was quoted recently in THE JOURNAL in the foreign news column.

47. **Curable Forms of Meningeal Hemorrhage.**—Widal has established the value of lumbar puncture for the diagnosis of meningeal hemorrhage, and Chauffard now enumerates the cytologic and chromatic findings which establish the prognosis. He describes 2 cases in detail which terminated in recovery. Kernig's sign was not found in either, but the aspect of the cerebrospinal fluid was alike in both. At first it contained a large proportion of blood, but in the three or four successive punctures the fluid was seen to lose its blood and

lymphocytosis became pronounced as the fluid grew a limpid yellow. There was no polynuclear phase. The fluid was drawn into 3 tubes each time for better comparison, and the last trace of a clot did not vanish till after the eighteenth day.

48. **The Chlorids in Nephritis.**—Widal has coined the term "dechloridation" to express the treatment of epithelial nephritis by reducing the amount of salt. He found that daily ingestion of 10 gm. of salt by 4 patients affected with arteriosclerosis and interstitial nephritis, caused no disturbances, no edema, nor any discomfort. On the other hand, pronounced edema was produced in 2 out of 3 patients with epithelial nephritis. In a similar case in which the chlorids were determined for 62 days he was able to induce the edema to appear and disappear at will by administration of salt. The degree of the albuminuria followed the fluctuations in the chlorid curves. This patient was a man of 62, and the details of the metabolism while these tests were being made are given in tabulated form. Edema and albuminuria had previously invariably followed ingestion of solid food, and invariably subsided on a milk diet. By adding salt to the milk the edema could be reproduced at will, and by giving solid food without salt the edema could be promptly banished. These abrupt changes were made nine times and always with the anticipated effect. The albumin in the diet is immaterial; it is the salt alone that is responsible for the edema. The latter subsided even on a hearty meat diet if salt were withheld. Salt should not be fed to cows that supply milk for nephritis patients, and the normal proportion of salt in milk might be thus avoided. Temporary dechloridation can thus be accepted as an important factor in the treatment of epithelial nephritis and allows a much wider range of diet.

57. **Medicine at the Prado.**—Meige gives 12 photographs of masterpieces of painting that hang in the famous museum at Madrid, which portray subjects specially interesting from a medical point of view. In some the famous court dwarfs are depicted, in others the alleged extraction of stones from the head, the village barber, tooth-puller, court jester, etc. His list closes with a portrait of Charles V, marked by the adenoid expression and pronounced prognathism noted in all the portraits of his race in the various museums of Europe.

Archiv f. Klin. Chirurgie (Langenbeck's), Berlin.

Last indexed page 470.

58 (LXIX, 3.) *Unilateral Kidney Defects and Cysts in Single Kidney. Winter.—Ueber einseitige congenitale Nierendefecte nebst einem Fall von Nierencyste in der Solitärniere.
59 Ueber das solitäre Adenom der Leber mit Cirrhose. Caminiti.
60 *Appliance for Raising Part of Body. König (Altona).—Hebevorrichtung zur Erleichterung von Operationen und Verbänden.
61 *Lymph Nodes in Salivary Glands. v. Brunn.—Die Lymphknöten der Unterkieferspeicheldrüse.
62 Zur Aetiologie der Bauchblasenspalte (cleft abdomen and bladder). Bockenheimer.
63 Vascular Relations of Sciatic. Hofmann.—Die Gefässverhältnisse des Nervus isch. und ihre Beziehung zur Dehnungslähmung.
64 Substitution of Thumb by Toe. Nicoladoni.—Weitere Erfahrungen über Daumenplastik.
65 Ueber die chirurgische Behandlung des Kallösen Magengeschwürs. Brenner.
66 Knot Formation in Intestines. Wilms.—Mechanismus der Knotenbildung des menschl. Darmes.
67 Ueber Fisteln des Duodenums. v. Cackovic.
68 Ein Skoliosen-Redressions-Apparat. Scheffler.
69 (No. 4.) *Murphy Button versus Czerny-Lembert Suture. Neuweiler.—Zur Anwendung des Murphyknopfes.
70 *Ueber cirkuläre Gefäss-Sutur (suture of vessels). Jensen (Copenhagen).
71 Meine Erfahrungen über Lithiasis der Harnwege (urinary passages). Nicolich (Trieste).
72 Prolapsus intestini tenuis et flexuræ sigmoideæ per anum. Moskowicz.
73 Mechanism of Axial Torsion of Small Intestine. Wilms.—Wie entstehen Achsendrehungen (volvulus) des Dünndarmes?
74 *Ueber eine, durch ein chronisch wirkendes Trauma allmählich entstehende Luxatio sterno-clavicularis. Katzenstein.
75 Die Coxa vara als Belastungsdeformität. Blum.
76 Studien und Untersuchungen über Pathologie und Therapie der tuberkulösen Peritonitis. Köppen.
77 *Der isolierte, subkutane Bruch des Os scaphoideum der Handwurzel, ein typischer Bruch (fracture). Lilienfeld.

58. **Operations on a Single Kidney.**—In the case of cysts in a solitary kidney reported by Winter, the patient died after extirpation. He finds 11 similar instances in the literature in which an operation was undertaken on a solitary kidney. In the 7 cases in which nephrectomy was done none of the patients survived, but the 4 treated by nephrotomy all recovered. The lesions were due to stones, an abscess or pyonephrosis in the latter cases.

60. **Appliance for Raising Part of the Body.**—König gives illustrations of the convenient little cross-board which fits into cross grooves in the operating table and can be raised to the desired height by turning a crank.

61. **Lymph Nodes in Salivary Glands.**—Brunn found in 2 out of 23 cases examined genuine lymph nodes embedded in the submaxillary salivary glands.

69. **The Murphy Button.**—Neuweiler analyzes the results as published in 185 reports of operations on the stomach and intestines in which either the Murphy button or the Czerny-Lembert suture was used. He also reviews his own experience in 33 operations from the same point of view. His conclusions are that the suture is in certain circumstances to be preferred to the use of the button, especially in operations on the large intestine, and in lateral anastomosis of the large with the small intestine. Lateral anastomosis of the small intestine is best done with suture, except in case of gangrene requiring resection. The button should not be used in an anterior gastroenterostomy on account of cancer, nor in a posterior for benign stenosis of the pylorus.

70. **Circular Suture of Vessels.**—Jensen's numerous experiments were made principally on horses. He employed the various methods of suturing and bone, ivory or absorbable magnesium prothesis. The results indicate that thrombosis in such circumstances is due to infection, and consequently intervention of this nature should be undertaken only in an aseptic region. A prothesis is no advantage and has the drawback that it narrows the lumen. In his experience the best suture was the U-shaped union which brings a broad surface of the intima on both stumps into contact without narrowing the vessel. He found silk the best suture material for the purpose.

74. **Luxatio Sterno-clavicularis from Tending a Machine.**—Katzenstein's patient and the four other cases on record were lads of 17 or thereabouts whose work compelled them to incessantly reach with both arms and then pull backwards with great strength. The elastic fibers of the capsules of joints are not fully developed at this age and they become overstretched and exhausted with a chronically recurring trauma of this kind.

77. **Isolated Fracture of the Scaphoid.**—Lilienfeld encountered 7 cases of isolated, subcutaneous fracture of the scaphoid in the wrist in a recent series of 128 fractures. In all the fracture occurred from trauma acting on the hand in dorsal flexion and radial abduction. It may be diagnosed from the anamnesis.

Deutsche Med. Wochenschrift, Berlin and Leipsic.

78 (XXIX, No. 28.) *Active Anti-Plague Immunization with Attenuated Cultures. W. Kolle and R. Otto.—Die aktive Immunisirung gegen Pest mittelst abgeschwächter Kulturen.
79 *Ein weiterer Beitrag zur amaurotischen familiären Idiotie, einer Erkrankung hauptsächlich der grauen Substanz des Centralnervensystems. B. Sachs (New York).
80 *Zur Diagnose maligner Brusthöhlengeschwülste intra vitam. A. Feldt.
81 Torsion of Omentum. O. Nordmann.—Ueber intra-abdominelle Netztorsion.
82 *Influence of Heat on Coagulation of Milk. W. Silberschmidt (Zürich).—Ueber den Einfluss der Erwärmung auf die Gerinnung der Kuhmilch. (Concluded.)
83 *Ueber eine Modifikation der Salzwedel'schen Spiritus-Behandlung. Beschoren (Prenzlau).
84 Medical Insurance Practice. Gollmer (Gotha).—Ueber ärztliche Versicherungspraxis.
85 (No. 29.) *Zur Aetiologie und Therapie der Sklerose des Mittelohres. P. Stenger (Berlin).
86 Physiologic Importance of Rhodan. A. Edinger.—Ueber die Bedeutung der Rhodan-Verbindungen für den thierischen und menschlichen Organismus.
87 *Ueber Anurie. E. Apolant.
88 *Zur mechanischen Behandlung der Prostata. Laskowski (Berlin).
89 Connection Between Adenoids and Thorax Deformities. Loewenberg.—Ueber den Zusammenhang von Thoraxdeformitäten und adenoiden Wucherungen des Nasenrachenraumes.

78. **Anti-Plague Immunization.**—Kalle and Otto report from the Berlin Institute for Infectious Diseases that their experi-

ments and tests fail to show any particular benefit from the Haffkine method of immunizing against the plague. They consider the injection of avirulent living cultures of plague bacilli a true and effective means of vaccination. A single injection conferred on laboratory animals complete immunity for months with no phenomena of infection and merely a slight increase of the plague germs at the vaccinated spot. More than 80 per cent. of the rats and 60 per cent. of the guinea-pigs are still completely immune three months since the vaccination. The immunity conferred by the Haffkine method lasts at most only six weeks. The cultures were rendered avirulent by long cultivation at 40 to 41 C.—a particularly non-virulent culture being selected for the purpose. Three loops of this culture could be injected into guinea-pigs without symptoms, that is, more than three thousand times the lethal dose of a virulent culture.

79. Amaurotic **Family Idiocy.**—Sach's article appeared in the *Journal of Nervous and Mental Disease*, January, 1903.

80. Diagnosis of **Malignant Thoracic Tumors.**—Feldt reviews 3 published cases and reports 2 personally observed in which a malignant intrathoracic tumor was diagnosed from particles of tissue in the sputa. He gives cuts of the findings in his cases and affirms that such tumors could be diagnosed more frequently than is the case at present if in suspicious cases hemorrhagic sputa were examined against a black background for small scraps of tissue and the latter investigated by the usual histologic technic.

82. Influence of **Heat on Coagulation of Milk.**—Silberschmidt's research establishes that cow's milk heated too long or too hot entirely loses its property of coagulating under the action of rennet.

83. Modified **Alcohol Compress Treatment.**—Beschoren regards Salzwedel's alcohol compresses as an indispensable aid in the treatment of local inflammatory processes. Even if the phlegmon, panaris or lymphangitis does not retrogress, as usually occurs, the formation of a superficial abscess is hastened and after-treatment facilitated. Salzwedel applies gauze moistened with alcohol to the spot, covered with dry gauze and fastened with a perforated impermeable outer covering. Beschoren has found that the part sometimes smarts with this application, and modifies it by adding to the alcohol an equal amount of a 1 per cent. solution of aluminum acetate. The chemical combination raises the temperature of the fluid several degrees and the application is always soothing. He applies the rubber tissue directly over the moistened gauze and the cotton outside, and recommends this technic as an ideal method of treatment for local inflammatory processes. He reports a few cases in detail.

85. **Etiology and Treatment of Sclerosis of Middle Ear.**—Stenger ascribes many cases of sclerosis of the middle ear to disturbances caused primarily by swelling of the turbinate bones or some other anomaly in the nose affecting the eustachian tubes. Prompt attention to subjective ear symptoms and removal of the primary factor in the nose may arrest the incipient ear affection and relieve it in many advanced cases. He relates two typical instances in which the patients were restored to their business by the relief of the deafness after partial resection of some of the turbinate bones, supplemented by electric massage and catheterization.

87. Anuria.—Apolant reports a case of complete anuria for nine, and later for eight days, terminating in recovery. He assumed that a stone had become impacted in one ureter and the other had contracted by a reflex spasm, and administered belladonna on this supposition. The symptoms became alarming the eighth day, and Nitze passed a catheter into the right ureter, allowing evacuation of ten quarts of urine in the first twenty-four hours. The patient was an elderly, gouty subject and the projected nephrotomy might have had serious consequences.

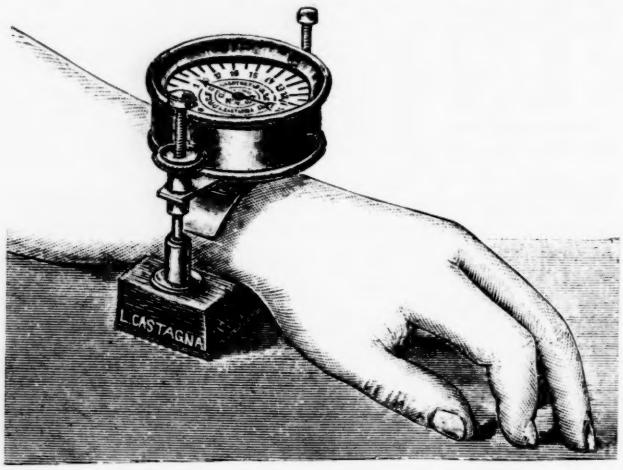
88. **Mechanical Treatment of the Prostate.**—Laskowski gives cuts of two instruments he has devised to apply vibration massage to the prostate through the rectum or the abdominal wall. He also describes another which allows the application of cold at the same time.

Muenchener Med. Wochenschrift, Munich.

90 (No. 24.) *Ueber einen Apparat zur Kontrolle des Pulses in der Narkose. G. Gaertner (Vienna).
91 *Zur Behandlung der Gesichtslagen (face presentations). Anselm.
92 *Das Babinskische Zehenphänomen (toe sign). A. Richter.
93 *Beitrag zur Aether-Narkose. C. Longard (Forst-Aachen).
94 *Eine bösartige Scharlach-Epidemie. Günther.
95 (No. 25.) Study of Effects of Projectiles. Hildebrandt.—Zur Erklärung der Explosions-Schüsse.
96 *Tar for Reduction of Dust in Streets. M. Schottelius and Guglielminetti.—Ueber die Teerung von Strassen zur Bekämpfung der Staubplage.
97 *Die Galvanokaustik in Form des Einstichs zur Therapie der Kehlkopf-Tuberkulose. L. Grünwald (Munich).
98 Ueber Malaria im nordwestlichen Deutschland. A. Köppen.
99 Technisches über das Riva-Rocci Sphygmomanometer und Gaertner's Tonometer. A. Martin. (Commenced in No. 24.)
100 (No. 26.) Simultaneous Appearance of Levulose and Dextrose in the Urine. A. Lion.—Zur Frage des gleichzeitigen Auftretens von Fruchtzucker und Traubenzucker im Harn.
101 Chorea hysterica traumatica. R. Schlüter.
102 Tabes and Trauma. Windscheid (Leipsic).
103 Ueber Hämolyse bei experimentellen Infektionen. O. v. Wunschheim.
104 Softened Buboes in Early Syphilis. M. Marcuse.—Ueber erweichte Bubonen der Frühlues.
105 *Das Antistreptokokken-Serum und seine Anwendung beim Menschen. Menzer. (Commenced in No. 25.)
106 (No. 27.) Simple Means of Testing Phosphorus in Phosphorized Oils. W. Straub.—Eine einfache Methode des Nachweises von Phosphor in Phosphorölen für klinische Zwecke.
107 *Ueber anastomotische Circulation des Herzens. G. Galli.
108 *Die Massage-Behandlung frischer Knockenbrüche (fractures). Jordan.
109 Congenital Absence of Clavicles. A. Gross.—Ueber angeborenen Mangel der Schlüsselbeine.
110 Energy Quotient in the Newborn. H. Cramer.—Zur Energiebilanz beim Neugeborenen.
111 Brucin, ein neues Gegenmittel beim Morphinismus. A. Fromme.
112 Ueber chronische Dystrophien und Trophoneurosen der Haut im Anschluss an kasuistische Mitteilungen. F. Volhard. (Commenced in No. 26.)
113 Obituary of Anton Bumm.
114 (No. 28.) *Ueber die Anwendung der Morphium-Scopolamin-Narkose in der Gynäkologie. S. Flatau.
115 *X-Ray Shields. G. Holzknecht and R. Grünfeld (of the Röntgenlaboratorium of the k. k. allg. Krankenhaus, Vienna).—Ein neues Material zum Schutz der gesunden Haut gegen Röntgen-Licht und über radiologische Schutzmassnahmen im Allgemeinen.
116 Zur Kenntnis der nach Trauma entstandenen Aorten-Insuffizienz. T. Struppler.
117 *Epidural Injections. A. Strauss.—Meine Resultate der epiduralen Einspritzungen durch Punktion des Sakral-Kanals bei Syphilis und den funktionellen Erkrankungen der Harn- und Geschlechtsorgane.
118 Koplik's Spots in Measles. Aronheim.—Sind die Koplikschen Flecken ein sicheres Frühsymptom der Masern?
119 Choked Disc. Liebrecht.—Zur Entstehung und zur klin. Bedeutung der Stauungspapille.
120 Zur Frage der Ovariotomie in der Schwangerschaft. M. Graefe.
121 *Yohimbin as a Local Anesthetic. C. Magnani.—Zur anästhesierenden Wirkung des Yohimbin (Spiegel).
122 Women in Medicine. L. Stieda.—Ueber die Zulassung der Frauen zum med. Studium.

90. **Pulse Controller for Narcosis.**—Gaertner's experience with chloroforming animals has convinced him that the usual cause of death in narcosis is the depression of the blood pressure. Dogs succumb to chloroform much more readily than man, but he found that invariably the animals could be saved if close watch were kept on the blood pressure and as soon as the pulse became fainter proper measures were adopted. He has also learned that it is impossible to rely with accuracy on even the most skilled digital examination of the pulse, as perception becomes deadened under certain circumstances. For these and other reasons which he details, he regards the little apparatus he has devised as an invaluable contribution to the technic of chloroform anesthesia. It is somewhat on the principle of his ring "tonometer," which is coming into current use. He remarks that Mikulicz has reported three deaths under chloroform of subjects in convulsions. During convulsions the blood pressure is extremely high, and exceptional caution is necessary in this condition, as the narcosis is liable to raise the already extremely high blood pressure to a dangerous height. In one of Gaertner's patients, a man of 76, the average normal pressure was 155, and it rose during the narcosis to 220; and in a woman of the same age it rose from 176 to 215, although the anesthesia was superficial. Such a rise might be fatal in certain conditions.

The blood pressure should always be determined as a routine measure before giving chloroform and a venesection may be indicated. He adds that his pulse controller has been used by a number of operators and in more than 200 operations, and all express delight at the reliability of the instrument and the relief from anxiety it affords, enabling the narcosis to



be safely steered to its conclusion. The language spoken by the apparatus is only imperfectly understood as yet, but time will undoubtedly render some such device as indispensable as the thermometer.

91. **Treatment of Face Presentations.**—Anselm compares the reports of various maternities and shows that expectant treatment has produced fully as good if not better results in the hands of Fehling, Bumm and v. Herff as Opitz's intervention.

92. **The Toe Reflex.**—Richter cites statistics to show that Babinsky's sign was positive in 1.8 per cent. of 500 healthy persons tested. Notwithstanding this occurrence of the sign in a few healthy persons, he regards the reflex as a very valuable presumptive evidence of some disturbance in the function of the pyramidal tracts.

93. **Improved Mask for Ether.**—Longard reports 2,700 ether narcoses in which his mask was used, and in only 2 was there a trace of the stage of agitation. He thinks the latter is due more to carbonic acid gas intoxication than to the ether, and this is avoided with his mask. His experience has shown that there are no contraindications to the use of ether by this method. Only 15 to 30 c.c. of ether are required for women and children, and 40 to 60 c.c. for men. An hour's narcosis requires 75 gm. for women and men and 100 gm. for hard drinkers.

94. **Malignant Scarlet Fever.**—Günther reports an epidemic of 150 cases of this disease, affecting adults mostly, and fatal in less than twenty-four hours in a large majority of the cases. All those in which the brain was affected from the start terminated in death.

96. **Tar to Reduce Dust in Roads.**—The experiments at Monaco and elsewhere with crude petroleum have not proved very successful as the results were not durable. But the application of boiling coal tar produces a coating like cheap asphalt, which has lasted eight months to date and fully answers the desired purpose. The total expense is only $80 for a kilometer of a road 15 feet wide, that is, about $128 a mile, with coal tar $6 to $10 a ton.

97. **Galvanocautery Punctures in Tuberculosis of the Throat.**—Grünwald explains that there is little hope of a cure unless the deep-lying infiltrations are drained. This is accomplished by puncture with the pointed galvanocautery. The immediate relief afforded is surprising, while there is slight if any reaction. He gives cuts of several cases. From two to five punctures are required.

105. **Antistreptococcus Serum.**—The long series of researches described have demonstrated that antistreptococcus serum acts by stimulating phagocytosis and absorption. The best results are attained with large doses in the early stage of acute streptococcus infection. Serum made from freshly cultivated human streptococci is the only one that is effective, but its results on animals can not be applied to man.

107. **Anastomotic Circulation of the Heart.**—Galli reports a case at Baccelli's clinic in which the mouth of the right coronary opening into the aorta had been entirely obliterated by a sclerous neoformation. The closest scrutiny failed to reveal any sclerous alterations in the right heart and only a single sclerous focus in the rear of the left heart. The patient was a syphilitic and had had articular rheumatism twice. Galli gives cuts of the heart showing an anastomosis between the right and left coronaries which explained the lack of nutritional disturbances.

108. **Massage of Recent Fractures.**—Jordan is an advocate of early massage, and states that out of 73 patients, of whom 27 were over 40 years old, 67 recovered complete working capacity after fracture of arm or shoulder, and only 2 are much incapacitated. His principles are: for the upper extremity, massage and mobilization, supplemented by fixation after each massage in case of fracture of a joint or of the shaft without material dislocation. For the leg, massage should be restricted to the joints, in combination with a walking apparatus. In fractures of the long bones of the leg, massage is only a preliminary.

114. **Morphin-Scopolamin Narcosis in Gynecology.**—Flatau tabulates the details of 47 cases in which this method of narcosis was employed, and concludes with the warning that it is unsuitable and dangerous for the majority of physicians, for surgical intervention and especially for obstetric operations.

115. **New Material for Protection Against X-Ray Burning.**—The sheet lead used to protect the sound skin in *x*-ray exposures leaves smutty marks on skin and clothing, looks unsightly and dirty even when new, and soon cracks. Holzknecht has remedied all these defects by having a coating of vulcanized rubber applied on each side of the sheet lead. This rubber-coated lead lasts indefinitely without cracking. He finds the most convenient shape to be a long rectangle with a semicircle cut out at one end. By having a number of these sheets with semicircular openings of different sizes they can be arranged around the part to be exposed leaving an opening of the desired diameter.

117. **Epidural Injections.**—Strauss tried this method in the mercurial treatment of 10 syphilitics, but soon abandoned it as possessing no advantages over the usual methods. But in enuresis, impotence, sexual neurasthenia and allied conditions the results were remarkable improvement or complete cure. In 7 cases of incontinence only one or two injections were required. In 2 cases of nocturnal emissions one was cured and the other much improved by the same, as also 2 cases of impotency. A patient with general sexual neurasthenia was essentially improved, but a second one of this class failed to derive any benefit. He injects 5 to 30 c.c. of a solution of cocain, .01 gm.; sodium chlorid, .2 gm., and distilled water to 100 gm., adding two drops of 5 per cent. aq. carbol. He uses a platinum-iridium needle 6 cm. long and 1 mm. thick with the syringe illustrated in THE JOURNAL of July 25, p. 287. He makes the injection slowly by puncturing the sacral canal, and as it is very tolerant the injection can be soon repeated; one to five days is his average interval.

121 **Yohimbin as a Local Anesthetic.**—Magnani corroborates the testimony of others in regard to the value of yohimbin for local anesthesia. In his ophthalmologic practice he found that it affected the tissues like tropacocain while it resembled cocain in its anesthetic effect.

Hygiea, Stockholm.

123 (No. 4.) Physiologic Action of Alcohol. C. G. Santesson.—Om alkoholens fysiolgiska verkningar.
124 *Leucocytosis in Appendicitis. G. Nilson.—Kasuistikt bidrag till fragan om leukocytosens betydelse vid appendicit.
125 Om transfixion af iris. A. Dalen. Three cases.
126 Our Beverages. E. Almquist.—Om verkan af smärre alkoholdoser samt om vara läskedrycker.

127 (No. 5.) *Cancer Research. O. Sandberg.—Studier om Kräftan.
129 *Om operation för symblefaron enligt May. J. Landström.
130 (No. 6.) History of Abdominal Gynecological Operations. F. Westermark.—Om de viktigaste gyn. bukoperationernas utveckling.
131 Tyfold-epidemien i Ronneby, 1901. J. Dahl.
132 *First Aid in Germany and Austria. E. Boman.—Om frivilliga sjukvärdsföreningar, etc.
133 *Psychoses on Foundation of Syphilis. H. Marcus.—Akuta förvirringstillstand pa syfilitisk grund. (Commenced in No. 5.)
134 (No. 7.) Alcohol and Muscular Effort. J. Widmark.—Om sprit och idrott.
135 Diagnosen af cancer ventriculi. E. Rodhe.
136 *Mercuriololja-ett nytt kvicksilferinjektions-medel. M. Möller.
137 *Oleum mercurioli (90 per cent. Hg.). A. Blomquist.
138 Six Cases of Extra-uterine Pregnancy.—Extrauterint hafvandeskap.
139 Campaign Against Tuberculosis. R. v. Post.—Kampen mot tuberkulosen ute och hemma.

124. **The Leucocytes in Appendicitis.**—Nilson reports the details of 17 cases showing the value of the blood count as an aid in diagnosing. In 9 cases there proved to be no suppuration and the leucocytes ranged from 7,500 to 18,000 during the first two days and then rapidly subsided to normal. In only one instance was the number 20,000 to 26,000 for five days. The appendix was obliterated by catarrhal inflammation, but there was no abscess. In the other cases the leucocytes numbered 18,000 to 29,700, and the appendix was found perforated and inclined to gangrene. An abscess in the groin was operated on in one patient, with a leucocytosis of 14,500 to 23,000. The whites still remained above 12,800 and a subphrenic abscess was discovered and evacuated six days later. The whites still continued to rise and reached 21,200, when the appendix was extirpated a week later. The leucocytosis continued and rose to 26,000, but after evacuation of a small gaseous abscess found in the Douglas pouch, the whites dropped to 10,000 in two days after having been continuously in the neighborhood of 20,000 for nearly a month. In 2 cases of diffuse purulent peritonitis the leucocytes reached 27,200 and 40,000.

127. **Cancer Research.**—Sandberg's article is a study of the 2,153 cases of cancer treated at the Sabbatsberg Hospital, 1879-1901. Less than one-third were on male subjects and in half of these the cancer was located in the stomach (315 out of 623 male patients). About 1.71 per cent. of all the male patients received during this period were affected with cancer, and 4.32 per cent. of the women patients, the total number of patients being 71,839. He gives the particulars, remote results after operations, etc. Cancer in the stomach developed without metastases in 52.5 per cent. of the 229 cases in women, and in 54.7 per cent. of the 315 male cases. Metastases were most frequent with cancer in the liver, and they were found in 101 out of 483 cases of cancer of the uterus, and in 131 out of 288 on the mamma.

129. **May's Symblepharon Operation.**—Landström applied in 4 cases the operation suggested by May in 1899. He regards it as the best method to date, although not ideal. The results were extremely satisfactory in his cases, as he shows by photographs.

132. **First Aid in Germany and Austria.**—Boman describes the volunteer "Samaritan" associations in the German-speaking countries and the training of their members in the first aid to wounded persons and in emergencies of various kinds. He urges similar organizations elsewhere.

133. **Acute Psychoses in Syphilis.**—Marcus' article is an exhaustive study of this subject and its literature. He has personally observed 11 cases and analyzes them and 6 others reported by Brewer and Bailey, Jolly, Fournier or others. All recovered under specific treatment except 2. He gives cuts of the autopsy findings in one case, showing the typical circumscribed basal meningitis, etc. His patients were from 26 to 53 years old. There was no hereditary taint or abuse of alcohol in the majority.

136 and 137. **Mercuriol Oil.**—This new preparation of mercury in the form of an aluminum magnesium amalgam, contains 90 per cent. mercury. It is similar to mercuriol, but is an oil and specially adapted for injecting purposes. Möller has used it in thousands of cases and has found it extremely effective with the minimum of symptoms of local irritation.

Russky Vratch, St. Petersburg.

140 (No. 49.) Study of "Secretin." L. B. Popelsky.—O sposobye dyeistvie HCl, etc.
141 Differential Significance of Bronchial Secretions. T. G. Janovsky.—K razpoznavatelnomu zvatcheniyu bronkhialnykh slyepkov.
142 Severe Heart Affections Indication for Artificial Interruption of Pregnancy. J. Y. Jakub.—Bolyezni serdtza, etc.
143 Coagulating Influence of Ferments on Peptone. N. A. Sakharoff.—O svertyvayushtchem dyeistvie brodil na peptony.
144 (No. 50.) Estimation of Impairment of Working Capacity by Eye Traumas. E. P. Braunstein.—Ob umenshenii trudosposobnosti pri povrezhdeniya glaz.
145 Study of Influence of Dyes of Aromatic Series on Digestion. A. I. Vinogradoff.—K voprosu o vliyanii iskustvennykh krasok aromat. ryada na pishtchevarenie.
146 (No. 51.) General Causes of Gastrointestinal Affections. A. A. Trzhetzyesky.—Obshtchiya pritchiny zhelud.-kish. zabolyevanii.
147 Eye Disturbances in Experimental Ergot Intoxication. K. K. Orloff.—Ob ezmyeneniakh pri chron. otravlenii sporynei e cya preparatami.
148 Vaginal Cesarean Section with Cancer of Cervix. F. K. Weber.—Vlagalishtchnoi kesarskoe syetchenie pri rakye sheiki matki, etc.
149 (No. 52-53.) Acute Glaucoma After Cataract Operations. M. I. Auerbach.—Ostraya glaukoma poslye operatzii katarakt.
150 Coincidence of Measles, Rötheln and Scarlatina. S. V. Vitlin.—Sovmyestnoe tetchenie ostro-likhoradotchnykh sypei. (Concluded.)
151 (II, 1.) K technikye laparocoeliotomia. V. S. Gruzdeff.
152 Superior Results of Electrolysis in Treatment of Cicatricial Strictures of Esophagus. Y. B. Seldovitch.—Lyetchenie rubtzevyk suzhenii pishtchevoda electrolyzom.
153 Electric Light Treatment of Gynecologic Affections. A. I. Orloff.—O lyetchebnom vliyanii byelova elektritcheskova svyeta (lampotchek nakalivaniya) pri nyekotorykh vospalitelnykh zabolyevaniyakh matki i pridatkov.
154 Potassium Permanganate as Specific Antidote to Acute Morphin and Opiate Poisoning. S. A. Finkelstein.—Kali hypermang. kak spec. protivoyadie pri ostrykh ogravleniyakh morphiem i opiatami.

Books Received.

Acknowledgment of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

THE LATIN GRAMMAR OF PHARMACY AND MEDICINE. By D. H. Robinson, Ph.D., Late Dean of the School of Arts, and Professor of Latin Language and Literature, University of Kansas. With an Introduction by L. E. Sayre, Ph.M., Professor of Pharmacy in, and Dean of Department of Pharmacy, University of Kansas. Fourth Edition, with Elaborate Vocabularies. Thoroughly Revised by Hannah Oliver, A.M., Assistant Professor of Latin, School of Pharmacy, University of Kansas. Cloth. Pp. 277. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co. 1903.

A THESAURUS OF MEDICAL WORDS AND PHRASES. By Wilfred M. Barton, M.D., Assistant to Professor of Materia Medica and Therapeutics, and Lecturer on Pharmacy, Georgetown University, Washington, D. C.; and Walter A. Wells, M.D., Demonstrator of Laryngology and Rhinology, Georgetown University, Washington, D. C. Flexible Leather. Pp. 534. Price, $2.50 net; with Thumb Index, $3.00 net. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

DISEASES OF THE EAR. A Text-book for Practitioners and Students of Medicine. By Edward Bradford Dench, Ph.B., M.D., Professor of Diseases of the Ear in the University and Bellevue Hospital Medical College. With 15 Plates and 158 Illustrations in the Text. Third Edition, Revised and Enlarged. Cloth. Pp. 718. Price, $5.00. New York and London: D. Appleton & Co. 1903.

THE PRINCIPLES OF OBSTETRICS. A Practical Manual for the Student and General Practitioner. By Stanley Perkins Warren, M.D., Portland, Me., Obstetric Surgeon to the Maine General Hospital. Superbly Illustrated by 165 Line and Half-tone Engravings. Cloth. Pp. 385. Price, $3.00 net. New York: William Wood & Co.

KING'S MANUAL OF OBSTETRICS. By A. F. A. King, M.D., Professor of Obstetrics and Diseases of Women in the Medical Department of the Columbian University, Washington, D. C. Ninth Edition, Revised and Enlarged. Cloth. Pp. 628. Price, $2.50 net. Philadelphia and New York: Lea Brothers & Co. 1903.

THE EXACT SCIENCE OF HEALTH BASED UPON LIFE'S GREAT LAW. By Robert Walter, M.D. Vol. I.—Principles. Leather. Pp. 302. Price, $2.00. New York: Edgar S. Werner Publishing Company. London: Kegan Paul, Trench, Trubner & Co., Ltd.

A NURSE'S HANDBOOK OF OBSTETRICS. For Use in Training Schools. By Joseph Brown Cooke, M.D., Fellow of the New York Obstetrical Society. Cloth. Pp. 391. Price, $2.00. Philadelphia and London: J. B. Lippincott Company. 1903.

PLAIN HINTS FOR BUSY MOTHERS. By Marianna Wheeler, Superintendent of the Babies' Hospital, New York. Illustrated by F. M. Miller. Flexible Leatherette. Pp. 54. Price, 35c. New York: E. B. Treat & Co. 1903.

THIRTEENTH ANNUAL REPORT OF THE EYE, EAR, NOSE AND THROAT HOSPITAL OF NEW ORLEANS, LA. Jan. 1, 1902, to Dec. 31, 1902.

Paper. Pp. 64. New Orleans: A. W. Hyatt Stationery Mfg. Co., Ltd. 1903.

FIRST BIENNIAL REPORT OF THE MONTANA STATE BOARD OF HEALTH. From Its Creation, March 15, 1901, to Nov. 30, 1902. Paper. Pp. 114. Helena: Independent Publishing Company.

THE WELCOME PHYSIOLOGICAL RESEARCH LABORATORIES. Founded 1894. Walter Dowson, M.A., M.D., Director. Cloth. Pp. 36.

The Public Service.

Army Changes.

Movements of Officers of the Medical Department, U. S. A., under orders from the Adjutant-General's Office, Washington, D. C., for the two weeks ending Aug. 8, 1903:

Adair, George W., lieut.-colonel and district surgeon-general, is relieved from duty in the Division of the Philippines, to take effect August 31, and will proceed to the United States and report by telegraph to the Adjutant-General of the Army for further orders.

Bosley, John R., first lieut. and asst.-surgeon, now at Fort McPherson, will report at that post for duty.

Brown, Orville G., first lieut. and asst.-surgeon, now at Washington, D. C., will proceed to Fort Monroe for duty.

Brown, W. E., contract surgeon, is granted leave of absence for two months from about September 1.

Chamberlain, Weston P., first lieut. and asst.-surgeon, is granted leave for one month.

Cable, G. L., contract surgeon, is granted an extension of leave for ten days.

Foster, Charles L., first lieut. and asst.-surgeon, now at Fort Myer, will report at that post for duty.

Fanning, George J., contract surgeon, on his relief from duty at Whipple Barracks by First Lieut. Henry D. Thomason, asst.-surgeon, will proceed to his home at Cacatow, Ariz., for annulment of contract.

Geddings, Edward F., first lieut. and asst.-surgeon, is relieved from duty at Fort Brady, to take effect on the return of First Lieut. William Roberts, asst.-surgeon, to duty at that post, and will then proceed to Fort Keogh, to relieve First Lieut. Paul C. Hutton, asst.-surgeon.

Gregory, Junius C., first lieut. and asst.-surgeon, is granted leave for one month, to take effect when he is relieved from duty at the U. S. General Hospital, Washington Barracks.

Hutton, Paul C., first lieut. and asst.-surgeon, will proceed to Pekin, China, and report to the commanding officer of the U. S. legation guard for duty, to relieve First Lieut. Frederick M. Hartsock.

Hartsock, Frederick M., first lieut. and asst.-surgeon, will proceed to the United States and report by telegraph to the Adjutant-General of the Army for further orders.

Hallock, Harry M., captain and asst.-surgeon, now at the U. S. General Hospital, Presidio, is relieved from further duty in the Division of the Philippines, and will proceed to Fort Porter for duty.

Hutton, Paul C., first lieut. and asst.-surgeon, is granted leave of absence for one month.

Jones, Percy L., first lieut. and asst.-surgeon, now at Atlanta, Ga., will proceed to Fort Monroe for duty.

Jones, John F., contract surgeon, is granted leave of absence for one month, with permission to apply for an extension of one month, to take effect on his relief from duty at Fort Washakie.

Kieffer, Charles F., captain and asst.-surgeon, will report to Major William H. Arthur, surgeon, president of the examining board at the Army Medical Museum Building, Washington, D. C., for professional examination and physical re-examination for promotion.

Lovering, Robert C., first lieut. and asst.-surgeon, now at Philadelphia, Pa., will proceed to Fort Leavenworth for duty.

Morris, Samuel J., first lieut. and asst.-surgeon, now at Fort Grant, will proceed to San Francisco and report for transportation to the Philippine Islands, where he will report for assignment to duty.

Mabee, James I., first lieut. and asst.-surgeon, now on temporary duty at Presidio, is assigned to permanent duty at that post.

Purnell, Harry S., first lieut. and asst.-surgeon, now at Fort Wingate, will proceed to San Francisco, Cal., and report for transportation to the Philippine Islands, where he will report for assignment to duty.

Pinkston, O. W., contract surgeon, is granted leave for one month, to take effect on the termination of the season of target practice at Camp Stoney Point, N. Y.

Peed, George P., first lieut. and asst.-surgeon, now at Portsmouth, Va., will proceed to Washington Barracks, and report at the U. S. General Hospital for duty.

Porter, Ralph S., first lieut. and asst.-surgeon, now at Chicago, will proceed to Fort Leavenworth for duty.

Palmer, Fred W., first lieut. and asst.-surgeon, now at Brooklyn, Mich., will proceed to Jefferson Barracks for duty.

Pipes, Henry F., first lieut. and asst.-surgeon, now at Fort Barrancas, will report at that post for duty.

Siler, Joseph F., first lieut. and asst.-surgeon, now at Fort McPherson, will report at that post for duty.

Stedman, Chester J., first lieut. and asst.-surgeon, now at Fort Adams, will report at that post for duty.

Smith, Charles F., contract surgeon, is relieved from duty at Fort Leavenworth, and will proceed to his home, Whitehall, Mich., for annulment of contract.

Smith, Charles F., contract surgeon, is granted leave of absence for one month.

Sabin, Wallace E., contract surgeon, is relieved from duty at Fort Apache and will proceed to Vancouver Barracks for duty.

Richards, J. W., contract surgeon, is granted leave of absence for one month on surgeon's certificate.

Ten Eyck, Benjamin L., major and surgeon, having been found by an Army retiring board incapacitated for active service on account of disability incident thereto, his retirement from active service, Aug. 3, 1903, under the provisions of Section 1251, Revised Statutes, is announced. Major Ten Eyck will proceed to his home.

Trenholtz, C. A., contract surgeon, is granted an extension of leave for fourteen days.

Van Kirk, Harry H., contract surgeon, is relieved from further duty at Fort Wingate, and will proceed to Fort Washakie and report for duty, to relieve Contract Surgeon John F. Jones, who will proceed to Fort Schuyler.

Whaley, Arthur M., first lieut. and asst.-surgeon, now at Sault Ste. Marie, Mich., will proceed to Fort Sheridan for duty.

Winter, Francis, captain and asst.-surgeon, is relieved from duty as attending surgeon and examiner of recruits at St. Louis, Mo., to take effect on the expiration of his present leave, and will then proceed to Fort Huachuca for duty.

Wood, Halsey L., contract surgeon, is relieved from duty in the Department of the Columbia, and will proceed to his home, New York City, for annulment of contract.

Navy Changes.

Changes in the Medical Corps of the Navy for the week ended Aug. 8, 1903:

Surgeon L. W. Spratling, Asst.-Surgeons C. H. DeLancy and E. M. Blackwell and Pharmacist C. E. Reynolds, detached from the *Columbia* and ordered to the *Hancock*.

Asst.-Surgeon H. L. Brown, detached from the Naval Proving Ground, Indian Head, Md., and ordered to the Navy Yard, Washington, D. C.

Asst.-Surgeons K. Ohnesorg and J. T. Kennedy, ordered to the Naval Academy.

A. A. Surgeon C. T. Grayson, ordered to the Naval Proving Ground, Indian Head, Md.

Pharmacist J. Cowan, detached from the Navy Yard, Boston, Mass., and ordered to the Naval Magazine, Iona Island, N. Y.

Pharmacist E. T. Morse, detached from the Naval Magazine, Iona Island, N. Y., and ordered to the Navy Yard, Boston.

Pharmacist E. May, ordered to the Naval Hospital, Norfolk, Va.

P. A. Surgeon J. A. Guthrie, detached from the *Vicksburg* and ordered to the *Solace*.

Asst.-Surgeon R. H. Michels, detached from the *Solace* and ordered to the *Wilmington*.

Asst.-Surgeon G. M. Mayers, detached from the *Isla de Cuba* and ordered to the *Vicksburg*.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended August 8, 1903:

SMALLPOX—UNITED STATES.

Alabama: Mobile, July 25-August 1, 3 cases.
California: Los Angeles, July 18-25, 5 cases.
Illinois: Chicago, July 25-August 1, 4 cases; Danville, July 25-August 1, 1 case.
Louisiana: New Orleans, July 25-August 1, 3 cases.
Maryland: Cumberland, July 1-31, 7 cases, 1 death.
Massachusetts: Fall River, July 25-August 1, 7 cases, 1 death.
Michigan: Grand Rapids, July 31-August 1, 1 case.
Missouri: St. Louis, July 25-August 1, 2 cases.
New Hampshire: Manchester, July 31-August 1, 2 cases.
New Jersey: Camden, July 31-August 1, 1 case.
Ohio: Cincinnati, July 24-31, 1 case; Toledo, July 25-August 1, 1 case.
Pennsylvania: Scranton, July 25-August 1, 3 cases.
Utah: Salt Lake City, July 31-August 1, 2 cases.
Wisconsin: Milwaukee, July 13-August 1, 14 cases.

SMALLPOX—FOREIGN.

Austria: Prague, July 11-18, 2 cases.
Belgium: Brussels, July 11-18, 4 deaths.
Brazil: Rio de Janeiro, June 29-July 12, 14 deaths.
Colombia: Bocas del Toro, July 14-21, 1 case, 1 death.
Ecuador: Guayaquil, July 4-11, 1 death, sporadic.
Germany: Bremen, August 1, 1 case on Steamship Bremen.
Great Britain: Dublin, July 11-18, 6 cases, 1 death; Manchester, July 11-18, 2 cases, 1 death; Newcastle-on-Tyne, July 11-18, 4 cases.
India: Bombay, June 23-July 7, 28 deaths; Calcutta, June 27-July 4, 1 death.
Mexico: Tampico, July 18-25, 1 death.
Russia: Moscow, July 4-11, 4 cases, 3 deaths; Riga, May 1-31, 24 deaths; St. Petersburg, July 4-18, 37 cases, 3 deaths.
Spain: Barcelona, June 20-July 4, 4 deaths.

YELLOW FEVER.

Colombia: Panama, July 13-27, 7 cases, 2 deaths.
Costa Rica: Limon, July 16-23, 9 cases, 4 deaths.
Mexico: Coatzocoalcos, July 18-25, 2 cases; San Luis Potosi, July 13, present; Tampico, July 18-25, 40 deaths; Vera Cruz, July 18-25, 34 cases, 17 deaths; Yucatan, July 15, present.

CHOLERA.

India: Bombay, June 30-July 7, 1 death; Calcutta, June 27-July 4, 27 deaths.

PLAGUE—UNITED STATES.

California: San Francisco, July 19, 1 death.

PLAGUE—FOREIGN.

Africa: Cape Colony, June 6-13, 5 cases, 4 deaths.
China: Amoy, June 20, 50 deaths daily, estimated.
Egypt: Alexandria, June 27-July 4, 4 cases, 1 death; Port Said, June 27-July 4, 1 case; Tantah, June 27-July 4, 2 cases, 2 deaths.
French Indo-China: Tonquin, June 10-23, 5 deaths.
India: Bombay, June 23-July 7, 178 deaths; Calcutta, June 27-July 4, 15 deaths; Karachi, June 14-21, 9 cases, 8 deaths.
Japan: Yokohama, June 20-27, 2 deaths.